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OPENING OF THE INDIAN TERRITORY.

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The opening of Indian country has continued from Colonial days to the present. Usually it has resulted from force and treaty, the strong dispossessing the weak. As a result, the Red man has, in general, moved frontierward, ahead of industrial waves, remaining for a longer time only on reservations set aside for tribes. The Indian's struggle even on these reserves has been a losing one, resulting largely from war, disease, and the cupidity of whites. History shows that Indian life and Indian institutions have not prevailed against the white man's civilization and commerce.

GATHERING THE TRIBES.

The Indian Territory and Oklahoma together form a focal point in the Indian history of the United States. There, fully twenty-five tribes were concentrated from reservations in various States, coming from the north, east, south, and west. Plate I shows the distribution of the leading tribes. Most Indians entered the Territory by choice and treaty, yet there were cases of coercion and rank injustice on the part of the National Government and States. Of the smaller tribes, the Delawares, from the banks of the well-known river of the same name, were forced westward; placed on a reservation in Ohio in 1789; moved to Missouri about 1818 and to the Cherokee Nation in 1866, receiving allotments in severalty. The Shawnees came by a circuitous route, extending from their old "Kickapoo" home in Wisconsin to Tennessee, the Carolinas, New York, Ohio, and then to the Territory, where

Traces and
Reservations.

they abandoned tribal relations in 1854. The Ottawas lived in Michigan; the Miamis in Wisconsin; the Peorias along the southern end of Lake Michigan, and the Modocs in Oregon and California. In their early history the Senecas, a warring member of the Iroquoian Confederacy, were strongly established in Western New York. The Shawnees lived in the region of Virginia; fought the Cherokees and Chickasaws; were forced westward to Ohio and Kentucky by whites, and finally incorporated in the Cherokee Nation. This tribe is best remembered by the Tippecanoe Campaign and the hero, Tecumseh.



PLATE I.

Quapaws and other Siouan tribes, the Kaws, Osages and Poncas migrated from the east at an early date. This stock separated in the Ohio Valley, the Quapaws going to Tennessee and Arkansas and the other tribes to the north-west. Later the remnant of each tribe was taken to Oklahoma and the Territory.

The five civilized tribes—the Cherokees, Creeks, Seminoles, Chickasaws and Choctaws, all of Muskogean stock, except the first named (which is Iroquoian)—were once powerful nations in the south-eastern part of the United States. They were caused to enter

their reservations at times denoted by Plate I. Summing up, we may say that the Territory has been the dumping-ground for remnants of tribes which formerly were located on reservations in States. Viewed in another way, it is a restricted area of an Indian country formerly large and little known. Most of the Indian Territory tribes are well known in history. Some of them strongly opposed our policy and fought us as early as Revolutionary times.

As we find them now, not many of the so-called Indians are full bloods. Most of them evince amalgamation with whites, being three-fourths or less Indian. Persons known as quarter-breeds or less would pass readily as white in the States. Many of the mixed breeds are large and stately in appearance. According to standards in the Territory, any one who can prove that he or she contains even a trace of tribal blood is an Indian. The Cherokees mixed readily with whites, and the Creeks somewhat with negroes.

Each of the Five Civilized Nations had a form of government modelled after a State. Men elected to office usually were physically strong and morally the best in the tribe. The simple social

Tribal Government. conditions did not require the enactment of many laws.

A marked difference of opinion prevails as to the success of the governments of the civilized tribes, yet evidence shows a greater degree of success than is usually thought. The Seminoles, at least, had an ideal government at one time. Justice was assured and crime punished so long as the Indians and their freedom were left alone. All lands in these Nations were held in common, occupancy giving the only title. At first this system of tenure worked no hardship, but it proved to be a great weakness with the incoming of whites. Schools and academies were established and supported; annuities and taxes were collected from non-citizens.

The present population of the Territory presents a cosmopolitan appearance. Not all who reside there are citizens, a large majority

citizenship. being white intruders from many sources. The roll of citizenship includes Indians, freedmen and intermarried citizens, the last named being the adopted citizens and the freedmen the Indians' former negro slaves and their descendants. Negroes were given freedom and tribal rights at the close of the Civil War. The war and emancipation wrought irreparable disaster to the civilized tribes.

WHITE INTRUDERS.

White men have entered the Territory for various purposes. Beautiful Indian women attracted a few, while fish, game, forest, agricultural and mineral resources influenced many. As a result

the foreign population increased rapidly, and the Nations soon contained more whites than Indians. Tribal governments could not check the intrusion and wrongdoing of the whites. Conditions grew gradually worse. "The strong oppressed the weak and the white man began to enrich himself at the expense of the Indian. The white and mixed bloods monopolized the productive land, often holding many thousands of acres, while the stolid full-bloods went half-starved in the mountains and forests. Fugitives from justice swelled the non-citizen population; crime was practically unrestrained, and robbery and murder occurred with alarming frequency, until it became unquestionably the duty of Congress to take a hand and devise some means to restore to order the chaotic condition which existed."*

GOVERNMENT CONTROL.

At no time has our Government relinquished all control over her Indian people, the policy being one of as little interference as possible consistent with the best interests of all concerned. During the early history of the Indian country, forts and military roads were established and maintained. In this connection, old Fort Gibson, near Muskogee, is one of the best known. It dates back to the first quarter of the past century and has a remarkably interesting history. For a time after their installation in the Territory, tribal governments succeeded reasonably well, but the changes ushered in by the incoming whites forced our Government to assume a larger measure of control. "The first important step" taken in this direction was that of March 3, 1893 (27 Stat. L., 645) creating the Commission to the Five Civilized Tribes, better known as the Dawes Commission, from its first chairman, the late Senator Henry L. Dawes.¹ The Commission undertook to change the system of land tenure and to introduce such other innovations as would result in the final disappearance of tribal governments and the creation of a new State.

It met strong opposition at first—both by Indians who wished to retain their tribal lands, manners and customs,^{Dawes Commission.} and by influential non-citizens whose financial interests would suffer with the change. Finally, after presenting the plan to the tribes with indifferent success, the Government took a firm stand and forced the obstinate Nations into line. It was then that the Commission's labours began. To suppress the sale of intoxicating liquors; rectify inequalities; prepare rolls of citizenship; appraise land, forest and improvements; and to make allotments proved to be

* Bixby, Report of Commissioner to the Five Civilized Tribes, 1906.

a very large, though necessary, undertaking. This Board of Commissioners continued to act until 1905, when a Commissioner was appointed to finish the work preparatory to the establishment of the new State. That the work of the Commission and Commissioner has been of the highest order is evidenced by results—this in the face of strong criticism and opposition. Allottees have received full consideration and protection which in some cases seems to have resulted in their practice of fraud. Most difficulties have arisen from the sale of lands by allottees. Under the law, freedmen, if of age, may sell that part of their land which is designated as surplus. Adult Indians can sell their surplus after the removal of restrictions by the Department of the Interior.

The Indian Territory of to-day is a most interesting field for study. It affords unusual opportunities for research by the geographer, economist, sociologist, and historian.

PHYSIOGRAPHIC REGIONS.

In this connection, I will briefly describe the country in which the Indians live. Not much was known of the place until 1896 and later. However, the preparation for the allotment and opening has been complete, more so than elsewhere in the United States. All of the surface, except a few square miles in the north-east corner, has been topographically surveyed and mapped by the United States Geological Survey, which department, also, has studied and described the structure and mineral resources. There is much literature of this kind; it includes topographic maps, five Geologic Atlases, a Gazetteer by Gannett, Professional Paper 31, and papers in various Bulletins and the Annual Reports.

The Territory is more diverse than is usually supposed. Its relief ranges between 300 and 3,000 feet in elevation, the highest and lowest areas being in the Choctaw Nation. The mean annual rainfall decreases from about 50 inches on the east to 30 inches on the west. Drainage is by the Arkansas, Red, Canadian and the Wichita rivers, of which the first named promises to assume importance in transportation. The structure is more varied than that of most States; series of strata, nearly horizontal in position, uplifts, normal folds, overthrust faults, and granitoid structures represent some of the larger features. Fully sixty per cent. of the land is timbered with species of oak, pecan, hickory, walnut, hackberry, ash, elm, sycamore, cottonwood, maple, pine, and other kinds. Forests occur on mountainous areas, valley bottoms and scarps. The largest pine forest is in the Ouachita Region. Black walnut, sycamore, elm,

maple and cotton-woods grow mostly on alluvial lands; oaks extend from low lands out onto stony and sandy uplands. Vine-covered trees are a noticeable feature along the lower Arkansas and Red River bottoms.



FIG. 1.—VINE-COVERED TREES ALONG THE ARKANSAS RIVER.

Mr. Joseph A. Taff,* of the U. S. Geological Survey, has divided the Territory into five physiographic regions; the Ozark, Prairie Plains, Arkansas Valley, Arbuckle and the Ouachita Mountain Region.

The well-known Ozark Region † of Arkansas and Missouri extends into the eastern part of the Cherokee Nation (Plate II). The rock formations in this part of the Territory lie in a nearly horizon-

* Geologic Atlases 74, 76, 98, 122 and 132.

† Geologic Atlases 122 and 132.

tal position and consist of limestones, sandstones, and Ozark Region shales, which form an elevated but deeply-dissected plain.

Certain scarps with elevations of 800 to 1,500 feet are called mountains. The topography is a product of excessive erosion, in which weak strata give gradual slopes and the hard ledges outcrop as rock terraces. At places, the simple structure is modified by

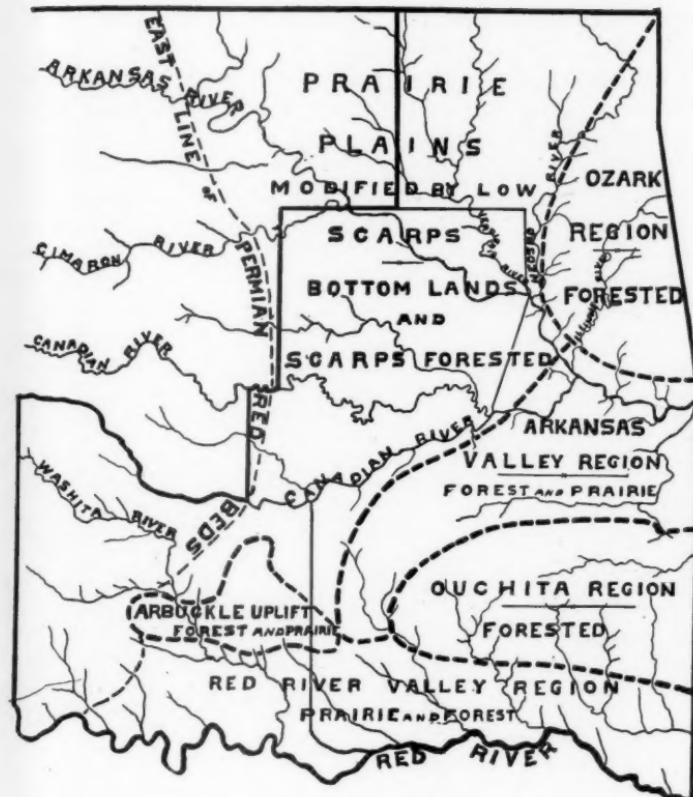


PLATE II.—TOPOGRAPHIC REGIONS.

faulting. In point of age the formations belong to the Ordovician, Devonian, and Carboniferous Systems. The Mississippian rocks, a series of the Carboniferous, have largest areal distribution, and are flanked on the west and south by members of the Pennsylvania series. The soil is thin and stony, at places flinty, but here and there occur small patches of desirable land both on the bottom and upland.

The numerous streams contain fish, and nearly all of the region is forested except where land is cleared for farming. Game—such as the quail, turkey, squirrel, and deer—are found at places. With few exceptions, roads are mere trails, whose positions are controlled by surface features. Travel is mostly on foot and horseback, waggons being used less than in smoother regions. The mountain areas, with their streams, fish, forest, and game, constitute an ideal home and retreat of the full-blood, who is the principal inhabitant. It is here that one may view the home of an Indian. Usually his house is small; near-by is a spring, and not far away a small patch of corn. The Indian life is simple and close to nature. Negroes are not welcome in "these parts."

The Prairie Plains are a broad and poorly-defined region* which extends across the Territory from north-east to south-west, lying to the west of the Ozark, Arkansas Valley, and Arbuckle Prairie Plains. Regions. It is floored by thick beds of Pennsylvania and Permian rocks, which form a broad stratum plain, the strata having a low, westward dip. The rocks are mostly shales, limestones, and sandstones. The surface slope is eastward, the elevation ranging usually between 600 and 1,000 feet. The plain is modified by broad valleys, low mounds, and rather prominent scarps. Soils vary with structure, being for the most part of residual origin. The Permian red bed-soils, so characteristic of Oklahoma, come in at places along the west border of the Territory, especially in the Chickasaw Nation. Rough lands and bottom lands are timbered; the undulating uplands and upland valleys are covered with broad expanses of prairie.

The Arkansas Valley Region* is floored with Carboniferous rocks, mostly of Pennsylvanian age, which flank the Ozark and Ouachita regions. A series of broad folds is the salient structural feature. These folds have been reduced by erosion, resulting in the formation of prominent land forms, such as the Sansbois and Rattlesnake Mountains. The larger rivers occupy deep valleys, whose bottoms contain sandy, alluvial soils. The upland soils correlate in kind with the shale, sandstone, and limestone formations from which they were formed, and with the degree of dissection. The region is mostly timbered. Good fishing and hunting may be had at places.

The Arbuckle Region† is one of the best-defined uplifts in the United States. It rises to an elevation of 1,400 feet, which is

* Geologic Atlas 132.

† Taff, Professional Paper 31, and Geologic Atlas 98.

about 600 feet or more above the surrounding country. It is a reduced, oblong, flattened dome, the major axis of which extends in



FIG. 2.—AN OVERTHrust FAULT IN THE ARBUCKLE UPLIFT.*

a northwest-southeast direction. In this region one may study within short compass splendid sections of rocks belonging to each series, from the Archæan to the Permian. Normal folds and over-

thrusts are features. The Wichita River flows through the mountains, forming well-defined water gaps near Dougherty. The surface is covered with prairie and forest, whose distribution in kind varies with the geological formations. The varied conditions for plant and animal life correlate with the large number of species present.

In The Ouachita province, rocks are mostly of Ordovician and Carboniferous age. They consist of shales, sandstones, and limestones, which show faulting and prominent folding at places. A succession of east and west trending folds constitutes a salient feature. The Region is much dissected with mountainous remnants lying high above intervening valleys. The highest ranges have an altitude of 1,000 feet in the west and about 3,000 feet near the Arkansas line. The topography, then, except on valley bottoms, is rough, the soil usually stony and roads are uncertain: Valuable pine forests cover a part of the Region; fish abound in the rivers; quail, turkey, and deer occur in their natural haunts, which are well-known hunting grounds.

Ouachita Region.

In some respects the Red River Valley Region resembles the Prairie Plains and Arkansas Valley Regions, from which it is incompletely separated by uplifts. The surface is quite smooth, sloping southward, the highest points having an altitude of 1,000 feet and the lowest about 300 feet. The roughest land is along the border of the Ouachita Region. The structure is simple, consisting of Cretaceous strata and older rocks, which dip for the most part southward. Pleistocene deposits form the sandy bottom land along Red River. Most soils are fertile, though poorly drained at places. Prairie and forest occupy the uncultivated land. The vine rose is a common flower. The population is more southern here than in other parts of the Territory.

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INDUSTRIAL DEVELOPMENT.

The evolution of industry has not been as rapid in the Territory as the natural resources would seem to warrant. Social conditions have in a way retarded the commercial awakening. Notwithstanding this fact, it seems very probable that the undeveloped resources have been potent factors in bringing about the opening. If the Territory had not abounded in those things which the white man covets, it might have remained longer as a typical Indian country.

I propose to treat the development in a two-fold manner, noting the commercial importance of resources and industries and their influence upon the opening and development of the Territory.



RAILROADS, TOWNS AND RESERVATIONS

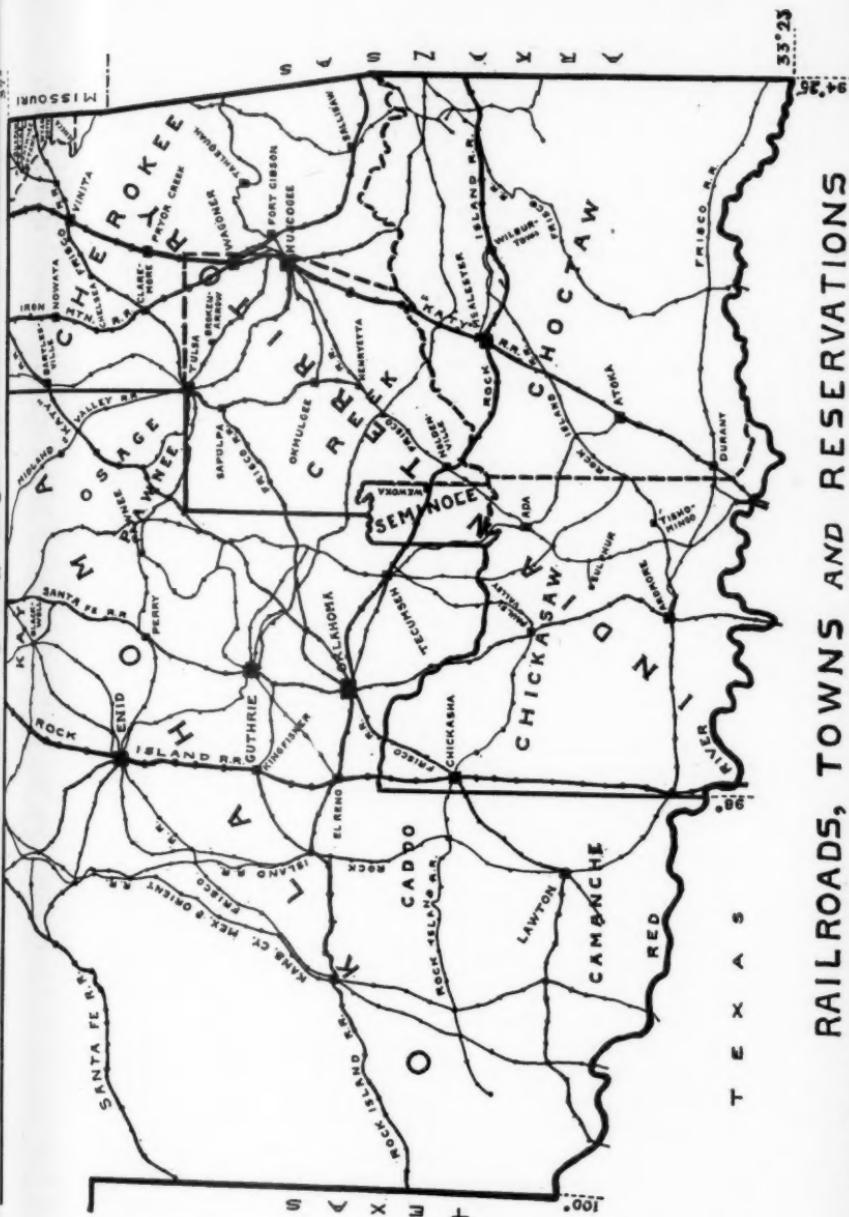


Plate III shows the distribution of the leading railroads. It is an attempt, also, to represent the intensity of travel by shading. At first, railroads were permitted to build through the Territory from north to south and from east to west. They carried thousands of tourists through the region, all of whom were impressed with the appearance of the country and its apparent wonderful possibilities. The verdict went forth that the Indian Territory is an inviting place, one of promise. Not a few of these tourists entered the region later as intruders; some to intermarry. When and where conditions were favourable the railroads extended branch lines, with the result that the country is now well served with this means of transportation.

The principal through lines operate trains on well-ballasted road-beds and sure time. The old box shanty station buildings are nearly a thing of the past, giving way to modern structures. Traffic is heavy throughout the year. As a whole, railroads are promoting the industrial development of the Territory. They are favourably located, especially so with respect to coal and agricultural lands. May we not conclude that the presence of railroads in the Territory has also hastened the time of opening?

Thousands of white men have gone to the reservations for fishing and hunting. Entering over the "Katy," Iron Mountain, "Frisco" or the Choctaw, they traversed beautiful stretches of Indian country while *en route*, found myriads of fish in the Neosho, Illinois and other rivers, and quail, turkey, deer, and an occasional bear in the woodlands. Game and landscape views served as advertisements for the further entrance of whites. Likewise, the attention was directed to other resources, but most noticeably to the forest.

Timber has been utilized in the production of ties, fence-posts, lumber, and for export. Formerly many thousands of walnut logs were cut from the forest without permission and exported. Now a nominal price is paid for such timber and log yards are seen at railroad towns located near timber land. The latest move by the United States Forest Service is to set aside two forest reserves, one in the Ozark and the other in the Ouachita Region.

We should not overlook the fact that all of the Territory lies in the rail-belt and that the day of the free entry of desirable public domain is a thing of the past in the United States.

Agriculture has been developed under several forms in the Territory, cattle-raising being the first to receive attention in a large way. For many years the broad, smooth prairies of the Cherokee, Creek, and Chickasaw Nations have supported large herds owned by

whites. Pasturage begins early in the year and continues until late in the fall. The only serious drawback to the profitable pursuit of the industry is Texas fever. Cattle, horses, mules, and swine are the leading farm animals. Dairying is slow in assuming importance. Cream when used is shipped in from the north.

Prairie hay is a valuable product in the Cherokee Nation. Sometimes two crops are cut from the same land each year and shipped to points in Missouri, Arkansas, and Louisiana. Baled hay is hauled to stations from distances of six miles or less and either stored in large barns or loaded directly onto cars. The annual shipment from each of certain small towns along the Iron Mountain and Katy railroads is a thousand cars or more. Alfalfa and timothy are being successfully introduced.

The Territory grows a variety of farm crops. Cotton and corn have been cultivated here for three-quarters of a century, yet the past few years have seen a large increase in acreage and an advance in price of land. The cotton belt extends northward to and somewhat above Broken Arrow, Claremore, and Wagoner, and southward to and across Texas. The yield in the Territory varies from one-half to one and one-half bales per acre, the latter on rich bottom land. Corn is rotated with cotton, oats, wheat, and potatoes. It is a sure crop in each Nation. The prize corn at the St. Louis Exposition was raised on Arkansas Valley bottom land near Fort Gibson. Two crops of potatoes may be grown on the same ground each year. When potatoes meet ready sale the profits are large. Just now many tracts of prairie land are being broken, and timber is being cleared for farming purposes. The appearance of the country is undergoing rapid change, the Nations first to receive allotments leading in agricultural development. Elevators, cotton gins, compresses, and cotton seed mills have been installed where needed. Fruit-raising has considerable importance.

In like manner, rural life is improving. Mail routes are being established; streams bridged; and roads laid out along section lines, except where this plan is not feasible. Wire fences prevail on the prairies and the rail and picket fences in timber regions. As regards farm machinery, the cultivator and self-binder have nearly supplanted the single shovel and cradle. The box house and the single and double log house of the country are being supplanted with modern dwellings.

MINERAL RESOURCES.

Indian Territory is the Pennsylvania of the west. It contains fair grades of stone, an abundance of material suited to the manu-

facture of brick and cement, no less than eight distinct beds of coal and large storage of oil and gas (Plate IV).

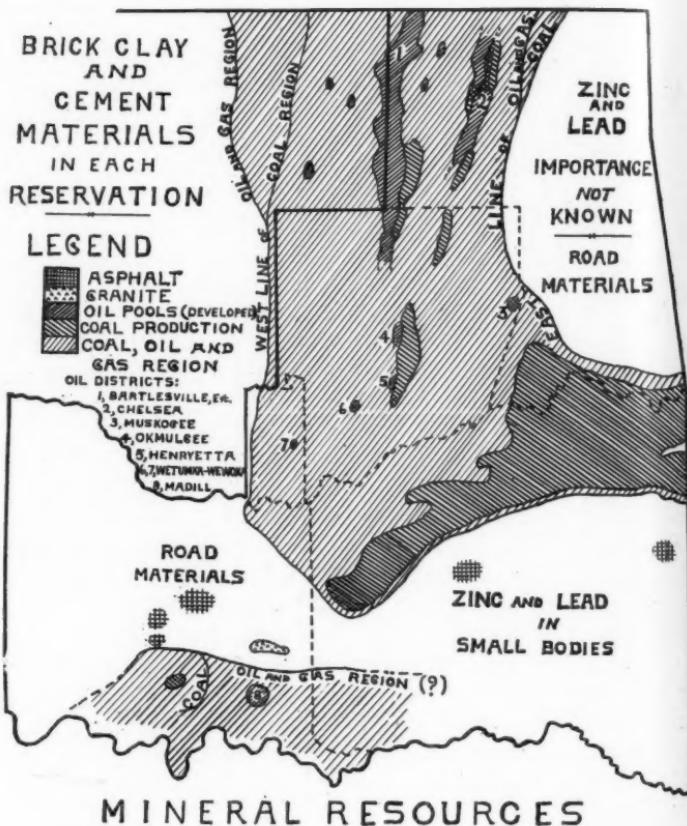


PLATE IV.

Coal mining* on a commercial scale began near McAlester about thirty years ago. Since that time the annual production of the Territory has occasionally reached 3,000,000 tons. It is soon to be greatly increased. The product, a high-grade bituminous, is rendered accessible to the States by shipment over the Rock Island, Iron Mountain, Katy, Frisco and other railroads. The leading coal-producing centres are McAlester, Wilburton, Hartshorn, Chambers, Coalgate, Phillips, Henryetta, and Schulter. A line of production

* Taff, Bull. 260, U. S. G. S.

100 miles in length extends from near McAlester eastward into Arkansas.

Plate IV indicates the extent of the coal region, a considerable

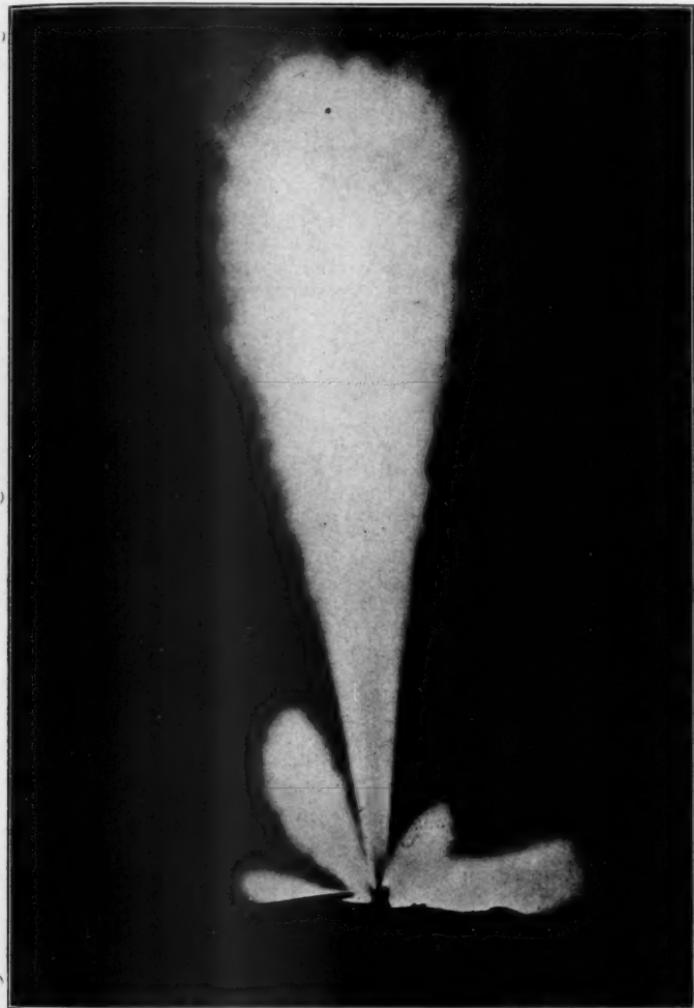


FIG. 3.—BURNING GAS WELL.

part of which contains deposits of economic importance. For reasons known to all, the Government has found it necessary to

segregate the most valuable coal lands, withholding them from entry.



FIG. 4.—PLACING STEEL HOOD ON GAS WELL.

Asphaltic deposits* of economic importance, and possibly more than the equal of similar materials found at a few other places in the

* 1 Pt. 1. Twenty Second Ann. Rept. U. S. G. S.

United States, occur in the Arbuckle and Ouachita Regions. They lie mostly in joint planes and fault lines, having come up from lower levels. At places the asphalt impregnates the sandstone or limestone walls, as the case may be. Asphalt lands, as with coal, have been segregated; hence their development is largely a thing of the future.

Small seepages of oil were discovered near Dewey and Chelsea about seventeen years ago. The first strong well was drilled in at Bartlesville a little later. The system of land tenure in vogue and Government control retarded prospecting until allotments subject to lease and sale were made. From that time until 1906 the development was remarkably rapid, more so than with other industries. Then allotments were being made in the oil regions of the Cherokee Nation, and the struggle for ownership of oil land became intense. Drilling has proved the presence of oil pools in each Nation, and the wells thus brought in can be numbered by the thousands. As one result, a nearly continuous line of derricks and strong wells now extends from near Caney, Kansas, southward past Copan, Dewey, Bartlesville, Ramona, and Tulsa to the famous Glenn Pool near Sapulpa, a distance of about 75 miles. Depths to oil here vary from 1,100 feet on the north to from 1,500 to 1,700 feet on the south. Many wells flow, in a few cases, 300 or 400 barrels each a day. The maximum flow of a well in Glenn Pool is about 1,000 barrels a day. *Strong gasers* were secured, the best-known one of these being located about five miles north-east of Copan. It is the oft-described Caney Gas well which threw out over 30,000,000 cubic feet of gas a day. It was struck by lightning February 23, 1906, and the flames, until extinguished at great cost, shot upward a distance of 150 feet.

Another oil region lies to the west of Chelsea, extending to and past Aluwe and Coodys Bluff on the north, and to a point west of Claremore on the south. The oil sands in this region lie from 400 to 700 feet below the surface. Drilling is easy and many of the hundreds of wells brought in are now flowing.

Much of the Territory between Chelsea and Bartlesville regions appears to be dry. It is gas-producing at places, as south-west of Lenapah. Further prospecting here may show the presence of other pools, as they are called. Outside the two large oil regions, smaller developments occur at places denoted by Plate IV. Pools occur in Oklahoma also, but mostly in the northeastern part.

Oil and gas resources of the region are sure to become of great importance in brick and cement making, and for general fuel and export purposes. There is over-production at this time, the Stan-

dard taking about 18,000 barrels a day out of a possible production of over 100,000 barrels. Increase in demand would bring a yet larger production and cause the Territory to assume first rank



FIG. 5.—OIL ON A TRIBUTARY OF CANEY RIVER.

in this line in the United States.* The price has declined to about 38 cents a barrel.† Pipe lines connect with the refinery at Whiting, Indiana, and large tank farms are located near Copan and Ramona.‡

* Recently a 700-barrel well was brought in three miles southwest of Muskogee.

† It was 43 cents April 18, 1907.

‡ A pipe line to the Gulf is now assured.

The waste of oil is large, extending onto the Verdigris and Caney rivers, which now carry a thick scum of oil to the Arkansas River. This affects fish, water fowl, and also transportation where small streams are forded.

Zinc and lead occur at places in the Choctaw and Cherokee Nations, the most promising locality being in the northern part of the Ozark Region. Here extensive prospecting is under way, with fair promise of favourable results. The structure is similar to that of the near-by Joplin and Galena districts. If the Ozark Region is found to contain paying quantities of these ores, the Full Bloods' last natural home will soon be a thing of the past.

In general, the industrial awakening in the Territory is very apparent. The increase in population is and has been rapid. The estimated growth was 117 per cent. from 1890 to 1900, and even more during the past six years. Towns are taking on city ways in structure, form of transit, and business. Pavements, water works, electric lighting, and street cars are among their improvements. National banks in the largest towns would do credit to an eastern city. The following outline indicates the growth of the leading towns:

NAME	POPULATION IN 1900	PRESENT POPULATION
Ardmore	5,681	10,000
Bartlesville	691	5,000
Chickasha	3,209	10,000
McAlester	3,479	9,000
Muskogee	4,254	20,000
Tulsa	1,390	10,000

The opening and development of the Territories by people from the north is resulting in better things for the States. Already the resources and problems of Arkansas, Louisiana, and other southern States are becoming better known and understood in Illinois, Iowa, and Nebraska, from whence came the immigrants. We may expect a further industrial awakening in Arkansas, especially, as conditions advance in the Territory. The two are alongside, and the time is near at hand when the south may receive even larger additions in population from the northwest.

THE NEW STATE.

Oklahoma is to be the name of the united Territories, when statehood is conferred. A convention now in session is endeavouring to frame a suitable constitution, one acceptable to Congress and the

President. The task is a large one, but only a final act in the making of an American State. This convention was preceded by others held for various purposes and by each Nation and kind of people. At first statehood was opposed; then separate statehood desired, and, finally, the name of the new State arose for consideration.

The Indian Territory part of the new State is especially diverse in social conditions, containing the educated and illiterate of three species of people. From this cosmopolitan body the crucible of civilization is to reduce a citizenship. Graft, now prevalent, is to be supplanted by substantial credit and commercial honour. The white man is to rule, and the problem of the Indian is largely solved in his amalgamation. He has given his blood and a few strong traits to the new civilization. This was and is his destiny. The negro is to remain a problem in social, educational, and industrial matters.

Oklahoma Territory's history is in many respects similar to that of the Indian Territory. Most, but not all of its reservations have been opened to whites and improved. The most notable exception is the Osage Nation, which at this time contains many wealthy Indians, a few of whom remain in their blanket garb.

As regards resources, the Territories supplement each other, and are sure to become a great State. The trend of political matters is likely to be democratic, leaning towards the south. Educational interests are advancing in both Territories, with a thriving State University* at the head of the school system.

GEOGRAPHICAL RECORD.

AFRICA.

WHITE WOMEN ON THE CONGO.—The Fathers Superior of the Catholic Mission on the Congo have held a meeting at Leopoldville and submitted various suggestions to the Government, among which is one that is attracting special attention. The Fathers ask that, in the interest of the officials and agents of the State and of the State itself, the Government hereafter encourage its employees to bring their wives with them to the Congo. They say they are convinced that this policy will be to the advantage of the work of civilization and that the quality of the white personnel will thereby be improved. They also ask that the Government pay the expenses of conveying the wives of its employees to the Congo, and that no clause in the contracts with employees place any obstacle in the way of establishing family life among the servants of the Government in the Free State. They believe that this will evoke new sympathies for the work

* Dr. C. N. Gould, Professor of Geology in the University of Oklahoma, has made several trips in the Territory with the writer, and assisted very materially in the gathering of data for this paper.

on the Congo and will stimulate progress. It is evident that the enhanced comforts and conveniences of life in that country and the greatly-reduced mortality have suggested this policy, which has hitherto met with little favour.

LORD CROMER ON THE ANGLO-EGYPTIAN SUDAN.—Lord Cromer makes some important remarks about the Anglo-Egyptian Sudan in his last report. He says the most advanced part of the country has scarcely emerged from a state of barbarism. For a generation to come it will not be necessary to consider the adaptation of Western methods to this region. The most important political issue will probably be how slavery may be completely abolished without causing serious disorders. The people need, not national government, but good government. The country is about one-third as large as the continental United States, but only 1,576 square miles (an area not as large as that of Long Island) are cultivated. The remainder consists of desert, swamp, and primeval forest.

The area under cultivation increased from 704,872 acres in 1905 to 1,008,642 acres in 1906—a difference of 303,770 acres. This rate of increase is probably abnormal. It was due to the fact that, in most parts of the Sudan, heavy rains fell during the past year, with the result that the increase of cultivation of lands which depend for their water on rain was over 260,000 acres. The population is probably increasing, but, as nearly as can be ascertained, it is still a little under 2,000,000. According to the latest returns, there are 3,104 Europeans and 9,815 Abyssinians, Egyptians, and Indians in the country, making a total of 12,919 foreigners.

The demand for unskilled labour is far in excess of the supply and the rate of wages has risen considerably. The workshops at Khartum are beginning to turn out some young men with technical education, but this and other similar institutions are far too young adequately to meet the increasing requirements of the country. A good deal has been done towards establishing railroad communications. The line from Kereima to Abu Hamed has placed the province of Dongola in direct communication with the sea, while the more important line connecting Port Sudan and the Nile Valley has bridged over the space that formerly separated the Sudan from the outer world. The next step will be to open the territory known as the Ghezireh which lies between the Blue and the White Nile. With this object in view, provision has been made for the construction of a bridge over the Blue Nile from Halfaya to Khartum. When this work is completed a railroad will be constructed up the middle of the Ghezireh, with branches both to the Blue and the White Nile.

HANDBOOK FOR EAST AFRICA, UGANDA AND ZANZIBAR FOR 1907.—This annual, as usual, is filled with the latest information concerning the large area in eastern Africa to which it relates. More and more European settlers are taking up the unoccupied land in the elevated Kikuyu district, whose climate is somewhat similar to that of southern Europe. "One sees now at intervals European farmsteads with, here and there, rosy-faced children who bear witness to the suitability of the climate for Europeans." This statement is the more impressive because the region is only a little south of the equator. We are also informed that the export trade in European potatoes, over 1,200 tons in 1904, is on the increase, and that the plains of Masailand and Ulu are capable of great development in the way of cattle ranches. Labour in these districts is cheap and comparatively plentiful. At Machakos, in Ukamba province, apples, plums, and peaches are now raised. The good land nearest the Uganda railroad is naturally being taken up first. It is known that the quality of the wool of such

breeds of sheep as are raised in temperate zones deteriorates in very hot climates, but the handbook declares that the elevated lands of the East Africa Protectorate are well adapted for sheep-raising. The Turkana natives, to whom explorers have given a very bad reputation, prove, on closer acquaintance, not to be a treacherous and dangerous people, but are peaceful in every way and have themselves asked to be taken under the jurisdiction of the Europeans.

AMERICA.

NEW DIRECTOR OF THE UNITED STATES GEOLOGICAL SURVEY.—Dr. George Otis Smith has entered upon his duties as Director of the U. S. Geological Survey. He was appointed by the President on the retirement of Mr. Walcott, now Secretary of the Smithsonian Institution. Dr. Smith has been engaged in geologic work for fourteen years, for a great part of the time as assistant geologist in the U. S. Geological Survey. His reports on the coal fields of the Pacific, the rocks of Mount Rainier, the geologic structure of the Tintic mining region, goldmining in central Washington, etc., have been published. Eventually, supervision of all the Survey's geologic work in New England was assigned to him and direction also of the geologic work in the areas of crystalline rocks in New Jersey, Pennsylvania, and Maryland. Last July he was appointed geologist in charge of petrology, with scientific supervision of the Survey work in that department.

Dr. Smith is a Fellow of the Geological Society of America, a Fellow of the American Association for the Advancement of Science, a member of the American Institute of Mining Engineers, of the American Forestry Association, and other scientific societies.

MINERAL RESOURCES OF THE UNITED STATES, 1905.—This is the twenty-second of the annual reports on the mineral resources of the country. Mr. David T. Day, Chief of the Division of Mining and Mineral Resources, says, in the introduction, that the object has always been to present annually a statement of the known mineral resources of the country and statistics of the production of these materials and the uses to which they are applied. The Government has no official information concerning the production of mineral substances excepting from the census reports or occasional studies of special mineral products. It was necessary, therefore, in order to collect annual estimates of the mineral products of the country, to enlist the co-operation of experts in each of the mineral industries. These experts are responsible for the subjects they treat. They have added to this work a vast volume of correspondence relating to the statistics of production. They have established a standard of accuracy and completeness in this annual that could have been otherwise secured only by long training of experts in the corps of the Geological Survey. Many of the experts have written their reports for many years, and usually for very small compensation, sufficient only to procure the clerical aid they need.

Among the leading reports in this volume are "Iron Ores," by John Birkinbine; "Gold and Silver," by Waldemar Lindgren and others, including special reports for each of the producing States and Territories; "Copper, Lead and Zinc," by Charles Kirchhoff; "Coal," by Edward W. Parker; "Natural Gas and Petroleum," by W. T. Griswold; "Precious Stones," by George F. Kunz.

Most of the papers in the volume and the statistical summary are issued at first as separate pamphlets.

THE U. S. GEOLOGICAL SURVEY AT THE JAMESTOWN EXPOSITION.—The exhibits of the Survey are under the direction of Mr. David T. Day. They include mounted geological maps from seventy of the Survey's Folios; special maps showing the distribution of economic mineral products east of the Rocky Mountains; minerals and ores whose distribution is shown on the maps, exhibited in an adjoining case; the new coloured geological map of North America (*BULLETIN*, 1906, p. 704); relief models illustrating the features, and the economic resources of the southern Appalachian region, the New River Coal Field, and the Philadelphia region; a topographic model of the Atlanta-Chattanooga region; a topographic and geologic model of Alaska and a collection of Alaskan minerals. An especially interesting feature will be the educational series of rock specimens for teaching geology, each containing 156 specimens and of which 200 collections have now been distributed to Universities and Colleges. A complete set of the Survey publications will also be on file, and the best methods of arranging and storing the large number of maps and folios for convenient use in public and private libraries are shown.

EXTERMINATING MOSQUITOES IN STATEN ISLAND.—Dr. A. H. Doty, Health Officer of the Port of New York, who has carried on a campaign against the mosquitoes in the Borough of Richmond since 1901, has dug about 350 miles of ditches through the marsh lands, which are now perfectly dry. Meadow grass cut from them in 1906 and cured as hay was sold at \$10 a ton. In his opinion, the conditions under which the insects breed have been effectually removed.

RAILWAY MILEAGE IN THE UNITED STATES.—Mr. Slason Thompson has prepared a pamphlet of "Railway Statistics" for 1906 for the General Managers' Association of Chicago. Our railway mileage was 206,960. The latest European statistics show that the railway mileage in that continent is 178,999. In 1905, there were in operation in the United States 48,357 locomotives, 40,713 passenger cars, and 1,731,409 freight cars.

MANUAL OF THE GEOLOGY OF CONNECTICUT.—The State Geological and Natural History Survey of Connecticut has recently issued *Bulletin* No. 6, a volume of 273 pages, in which an outline is given of what is known of the geological structure and history of that State. The language of the volume is no more technical than is necessary, and the work will undoubtedly be useful to various classes of readers. Its authors are William North Rice, Superintendent of the Survey and Professor of Geology in Wesleyan University, and Herbert Ernest Gregory, Professor of Geology in Yale. Professor Rice contributes the first chapter, descriptive of the geography of Connecticut as related to geological structure and history. Chapter II, on the Crystalline Rocks, by Prof. Gregory, covers 116 pages. Chapter III, on the Triassic, 63 pages, is by Prof. Rice, and Prof. Gregory treats, in Chapter IV, Glacial Geology, including the work of the Great Glacier in Connecticut and the economic relations of glacial deposits. The work is especially designed for teachers of science in Connecticut, but students of geology in other regions will find in it a clear statement of the characteristic features of a small but interesting area. All intelligent readers, moreover, may learn much from this book of the character of the rock formations and of the agencies by which, in the course of ages, the surface of Connecticut has been moulded to its present form and condition.

TIMBER SUPPLY OF THE UNITED STATES.—In a paper on "The Timber Supply of the United States" (*Forest Service, Circular 97*), Mr. R. S. Kellogg gives many

facts to show that our present annual consumption of wood in all forms is from three to four times as great as the annual increment of our forests, and that it is of the utmost importance to take vigorous steps to insure a future supply of timber. If we take such steps, however, he thinks the outlook is by no means unpromising. The forest area of the country is sufficient, if rightly managed, to produce timber enough to supply every legitimate demand. He says there is no reason why our timber should not, some day, be brought up to the point of yielding an annual increment of more than 30 cubic feet per acre, which will supply the quantity of timber now consumed, and, if used economically, will be sufficient for a much larger population.

GLACIERS OF ALBERTA AND BRITISH COLUMBIA.—Messrs. George Vaux, Jr., and William S. Vaux spent the last two weeks of July, 1906, in the observation of glaciers of the Rocky Mountain and Selkirk Ranges near the Canadian Pacific Railroad, a subject to which the first-named gentleman had already given much attention. The results of their brief investigation are described in the *Proceedings of the Academy of Natural Sciences, Philadelphia* (Part 3, 1906). After treating in detail of the condition, last year, of the Illecillewaet, Asulkan, Wenckemra, Victoria, Wapta, and Horseshoe Glaciers, the writers note that

in all these glaciers there has been decided shrinkage and recession in the past seven years. While changes in the position of the tongues of the glaciers may have been small, the ice mass and sectional area are evidently much less. On the other hand, the average yearly recession was, in 1906, less than during a similar period of five years before, the exception in the Illecillewaet Glacier being probably due to unusual conditions. The trifling advances in the Asulkan Glacier may be attributed to local causes and have no particular significance, but the increased daily rate of flow of the Illecillewaet, coupled with a thickening of the ice at the sky line as seen from the test rock, would seem to point to a period of greater activity in the not very distant future.

AUSTRALASIA.

THE SUGAR INDUSTRY OF QUEENSLAND.—The sugar-planters of Queensland have been much disturbed because of the new laws, which compel the Kanakas and South Sea Islanders who have furnished labour for the plantations of Eastern Australia to return to their homes in the Pacific. According to the *British Trade Journal*, there is no necessity for alarm. There appears to be no reason, climatic or otherwise, why white men cannot do all the work, as they have done in some places during the past two years. In 1905 Queensland produced 153,000 tons of sugar and 5,000,000 gallons of molasses. The total value of the crop, including by-products, was over eleven million dollars; so it appears that the industry is one of the greatest in Queensland. New South Wales produces about 20,000 tons of sugar yearly; and as the total consumption of sugar in Australia amounts to 185,000 tons, or 103 pounds per person, only 10,000 tons have to be imported.

E. H.

EUROPE.

HONOURS OF THE ROYAL GEOGRAPHICAL SOCIETY.—The Council of the Royal Geographical Society has awarded the Founder's Medal to Dr. Francisco Moreno, who has for twenty years been occupied in exploring South America, especially Patagonia and the Southern Andes, and the Patron's Medal to Dr. Roald Amundsen, the Norwegian explorer, who recently completed the northwest passage for the first time in a ship. The Murchison Bequest has been awarded to Captain G. E. Smith for his various important surveys in British East Africa; the Gill Memorial to Mr. C. Raymond Beazley for his work in

three volumes on "The Dawn of Modern Geography," the result of many years' research; the Back Bequest to Mr. C. E. Moss for his important researches on the geographical distribution of vegetation in England; and the Cuthbert Peek Fund to Major C. W. Gwynn, C.M.G., D.S.O., R.E., for the important geographical and cartographical work which he carried out in the Blue Nile region and on the proposed Sudan-Abyssinian frontier.

HONOURS OF THE PARIS GEOGRAPHICAL SOCIETY.—The chief honours for the past year have been awarded to Mr. René Chudeau for his journey across the Sahara and the Sudan; to Captain Larras for his itineraries in Morocco; to the Marquis de Segonzac for his explorations in Morocco; to Mr. Pierre Prins for his itineraries in Dar Fertit and on the upper Kotto; and to Mr. Paul Lemoine for his geological studies in the northern Sahara.

GEIKIE'S TRIBUTE TO RICHTHOFEN.—Sir Archibald Geikie has written in the *Proceedings* of the Royal Society an interesting article on the late Baron von Richthofen. Its description of the methods that master employed in educational geography will interest many American geographers. An extract appears below. Richthofen was called to the Chair of Geography in the University of Berlin in 1886:

"There he threw himself with all his characteristic originality and ardour into the task of devising and arranging such illustrations of geography as would bring vividly before the eyes and minds of his students, and of the general public, the characteristic features of land and sea, and the appliances for scientific exploration and travel. In connection with the University a Geographical Institute was organized by him, in which these various collections were arranged, and where ample space was found for large and small lecture rooms, map-drawing rooms, survey-practice rooms, a reference library and large reading room, well furnished with current geographical literature in all languages. In his later years he gave special attention to the illustration of the sea and succeeded in prevailing upon the authorities to build a Museum for Oceanography ('Meereskunde'), in which he sought to display, by help of charts, maps, models, paintings, diagrams and apparatus, every feature of the sea which is capable of such illustration. Nor did he confine his efforts to a strictly scientific field: all that could help to convey a practical sense of the work of navigation and exploration or quicken the popular interest in the navy came within the scope of his aims. He journeyed through the maritime countries of Europe in search of the best examples of illustration for his purpose—models of ships of all ages, methods of shipbuilding, and types of instruments employed in navigation. For spaciousness, and even luxuriosness of accommodation, for breadth of conception, and for the completeness with which the designs have been carried out, there is probably no geographical establishment in the world that can equal the Geographical Institute of Berlin, planned and carried out by the genius and unwearyed enthusiasm of its Director.

"Beginning his career with geological studies in the field, Baron von Richthofen passed into geographical investigation with the inestimable advantage of a training in detailed observation and induction. He thus became a geographer of the highest type. To him the mere addition of so many hundred square miles of territory to what was already known of the earth's surface, and the opportunity of affixing the names of friends and benefactors to peaks, promontories, rivers and inlets, were matters of no moment; it was the grand features of land and sea that interested him—their origin, their history, their relations to

each other, their influence on the progress and destiny of mankind. His geological apprenticeship with the Austrian surveyors among the Eastern Alps, and his early researches in mountain-structure and the behaviour of igneous rocks, could hardly fail to give him that grasp of physical features, combined with that knowledge of detail which are so often lacking in travellers and explorers. But besides his scientific accomplishments he possessed in rare measure the personal qualities which go so far to ensure the success of an explorer—health and strength alike of body and mind, a wide range of natural knowledge, courage, patience, endurance, tact, and kindness. It may have been the consciousness of the possession of these qualities, combined with a recollection of the pleasure their exercise had given him in his varied wanderings in Europe, America, and Asia, that led him, in response to many requests, to give a course of popular lectures on scientific travel. These lectures he subsequently extended; and in 1886, the year of his transference to Berlin, amidst all his University and other work, they appeared as his admirable *Führer für Forschungsreisende*. No one but a born and trained explorer, who had enjoyed ample experience by flood and fell all over the globe, could have written such a volume—so full of the ripest practical knowledge, so broad in its conception of what exploration should be, and so clear and emphatic in its statement of the accomplishments which are needed for the making of a successful traveller. Every department of research is luminously presented in his chapters, which may be regarded as a contribution of the first importance to geology and physical geography. Among the shrewd pieces of advice in the book the author recommends the explorer to travel alone, with only the attendants necessary for his purpose, but without any friend or companion who would do more than look after the material well-being of the expedition. Various treatises with similar aims had been given to the world before the publication of Richthofen's volume, from the time of Ami Boué's '*Guide du Géologue Voyageur*' onwards, but none of them so thoroughly deserves to be put into the hands of every man who proposes to undertake the examination of new or little-known regions, and who is willing to learn beforehand what is expected of him by those competent to judge."

OCEANIA.

THE IRRIGATION SYSTEM OF HAWAII.—The recent growth of the population of Hawaii has been so rapid that the islands have almost reached the limit of productivity. Further outlay upon improvements in agriculture, the one great industry, does not produce a commensurate increase in crops, and Malthus' law of diminishing returns begins to apply. Part of the recent growth has been made possible by a peculiar system of irrigation. For ten months out of twelve, as is well known, the tradewinds blow steadily upon the northeast side of the islands. The height to which the air must rise in getting over the volcanic mountains from 3,000 to 14,000 feet high causes enormous precipitation on the windward side; while the lee side, where the winds descend and grow warm, is comparatively arid. Hon. L. A. Thurston, Chairman of the Board of Agriculture and Forestry of Hawaii, in a recent address at the annual meeting of the American Forestry Association, mentions one instance on the main island of Hawaii, where in 1904 the rainfall of a place on the windward side of the mountains amounted to 420 inches, while that of another on the leeward side only 40 miles away was but 10 inches. Under such conditions it was to be expected that, with the growth of population and the introduction of the present highly-

intensive methods of agriculture, an irrigation system should be constructed to carry the superabundant water of the moist side to the arid regions a few miles to leeward. This has been done within a few years, and now on the windward side of the mountains there are 207 reservoirs with a capacity of eight billion gallons (equal to that of a lake with an area of four square miles and a depth of ten feet). From the reservoirs fifteen aqueducts, with a length of about 40 miles and a daily capacity of 600,000,000 gallons (equal to half an inch of rainfall over 70 square miles), "contour" around the mountains from the wet side to the dry. The land thus irrigated is enormously productive; for the volcanic soil of the islands is very rich, and the ideal conditions of abundant sunshine, steady but not excessive warmth, and plentiful water prevail. It is not possible, however, to irrigate all of the dry leeward slopes from the torrential rains of the other side. Fortunately, it has been found that in artesian wells water rises to a height of from 10 to 42 feet above sea-level, even in dry regions. Accordingly, in Oahu, the island where Honolulu is located, some 600 wells have been bored with an average diameter of 10 inches and an average depth of 450 feet, the deepest being 1,100 feet. From these wells nearly 600,000 gallons can be pumped daily by 110 big pumping plants. Some of the water is lifted to a height of 450 feet, and much of the 600 square miles of the island is now irrigated. Further irrigation has now become an expensive matter. Hence, in the future, Hawaii cannot maintain the phenomenal rate of development of the past decade.

E. H.

POLAR.

THE WELLMAN AIRSHIP EXPEDITION.—Reuter despatches say that the steamer *Frithjof* is expected to leave Tromsö for Spitzbergen, on June 1, with the Wellman Expedition. The party will consist of about 35 men. It will go to the expedition base at Danes Island, established last year, where three men are now living. Mr. Mallet, the well-known airship constructor of Paris, has reconstructed the balloon part of the airship *America*. The ship is now 183.14 feet in length, and its greatest diameter is 52.3 feet. Its volume is 265,000 cubic feet, and when inflated it will have a lifting force of 19,500 lb. A new steel car and mechanical equipment have been built in the Expedition's own workshops at Gennevilliers, a suburb of Paris, under the direction of Mr. Wellman and his chief engineer. The car, very light and strong, made of steel tubing, is 115 feet long. A steel reservoir contains 6,800 pounds of petrol for the motors, the principal motor working directly on two steel screws 11.5 feet in diameter. The proper speed of the airship is 16-18 miles an hour, and the fuel to be carried will give 150 hours of motoring at full speed. It is estimated that with the fuel provided the airship may travel over 2,250 miles, or nearly double the distance from Spitzbergen to the Pole and back again. Trials of the ship will be made at Spitzbergen before attempting the voyage to the Pole.

In addition to motors, machinery, nearly three and a half tons of petrol, a crew of four or five men, a dozen sledge dogs and a complete sledging outfit for a possible return over the ice, the *America* will carry a ton and a half of food, making it possible to spend a winter in the Arctic if necessary. It is planned to have trials of the airship in Spitzbergen in July and to start for the Pole in the latter part of that month or early in August.

VARIOUS.

AVERAGE DATES OF FIRST AND LAST FROST.—The average dates of first and last frost, and the average number of days without frost, are data whose im-

portance in climatology has long been recognized, and climatological tables which are in any way complete always include information on these points. For the United States, for example, we have had for some years charts showing the average dates of first and last frost. Such charts were published in the *Yearbook of the Department of Agriculture* for 1897; in Greely's "American Weather;" and, the latest ones, in Henry's "*Climatology of the United States*" (Bulletin Q, U. S. Weather Bureau, 1906). Up to the present time, however, no one has attempted to draw lines of first and last frost occurrence, and of the duration of frost, for the whole world. This study has now been undertaken by Otto Dorscheid, of Halle, who, in the *Meteorologische Zeitschrift* for January and February, 1907, presents a paper "*Die mittlere Dauer des Frostes auf der Erde*," in which are included three charts, showing respectively the lines of simultaneous occurrence of first frost, last frost, and the lines of equal duration of frost for the northern hemisphere. While the actual occurrence of frost in any individual year may, and does often, depart very considerably from the average date, nevertheless such lines are of considerable interest and importance in all studies of climate. These charts are, therefore, a distinct contribution to climatology.

The average dates of occurrence of first frost at different latitudes and longitudes, as given on Dorscheid's first chart, are shown in the following table, in which the months are indicated by Roman numerals:

LATITUDE.	EUROPE.	ASIA.	AMERICA.
	10° E. 40° E.	70° E. 100° E. 130° E. 160° E. 170° W. 140° W. 110° W. 80° W. 50° W.	
70°....	17. XI 17. XI	4. X 24. X	9. IX 10. IX
60°....	17. XI 17. XI	12. X 4. X	20. IX 4. X
50°....	15. XII —	28. XI 9. I	17. X 5. XII
40°....	—	—	1. I 15. I

It appears that from the west coasts towards the middle of the continents, along the same parallel of latitude, frost comes earlier, and from the interiors to the east coasts a gradual retardation is noted. The same chart shows in a very striking manner the effect of cold or warm ocean currents upon the frost conditions of a country.

The average dates of last frost are shown in the following table:

LATITUDE.	EUROPE.	ASIA.	AMERICA.
	10° E. 40° E.	70° E. 100° E. 130° E. 160° E. 170° W. 140° W. 110° W. 80° W. 50° W.	
70°....	5. V 5. V	12. V 17. VI	6. VI 5. VI
60°....	1. IV 6. II	10. IV 21. III	2. V 4. IV
50°....	6. II —	28. II 24. II	7. IV 1. II
40°....	—	6. II 28. II	—

This table shows that the disappearance of frost over the continents is much retarded from the coasts towards the interiors. The following table gives, in compact form, the average number of days with frost at different latitudes and longitudes in Europe, Asia and America:

LATITUDE.	EUROPE.	ASIA.	AMERICA.
	10° E. 40° E.	70° E. 100° E. 130° E. 160° E. 170° W. 140° W. 110° W. 80° W. 50° W.	
70°....	150 130	232 203	283 210
60°....	130 43	168 161	203 167
50°....	—	—	68 95
40°....	—	—	64

A careful study of the polar limits of trees in relation to his frost charts brings Dorscheid to the conclusion that these limits are principally determined by an excessive duration of frost—i. e., by a shortening to less than 100 days of the time with temperatures above freezing. In this investigation the polar limits of trees were taken, in a large way, as the limits of forests.

R. DEC. W.

CHANGES OF CLIMATE.—Apropos of the evidence which Mr. Ellsworth Huntington has lately brought forward from central Asia, of climatic changes or alterations during the last 2,000 or more years, Professor Cleveland Abbe (*Monthly Weather Review*, Dec., 1906) says: "We may in general conclude that in the present state of the globe and the atmosphere, and without any change in latitude or altitude, moisture, or sunshine, it is perfectly possible for such combinations of winds to occur as to give us in one century conditions favourable for rain, snow, and glaciers, but in another distant century drought, sand and desert. These alternations depend essentially upon extreme variations in what is called the general circulation of the atmosphere; they are perturbations produced by its own internal mechanism."

R. DEC. W.

FOREST PRESERVATION.—In his address elsewhere referred to Mr. Thurston emphasized the necessity of forest reserves in Hawaii. Formerly forests covered the unillitable mountain slopes from the sea to a height of 6,000 feet, but of late mills have been operated on all four of the larger islands; and the cutting has increased so that, in places, the mountains are almost denuded up to an elevation of 2,000 or 3,000 feet above sea-level. The enormous possibilities of destruction by floods and of loss to irrigation if forests are cut off in a land of such steep slopes and heavy rainfall as Hawaii is evident from such facts as the following: On the slope of a mountain 1,370 feet high on the main island 84 inches of rain fell during the month of February, 1904; but within three days after the cessation of rain no running water remained on the mountain side. All had rushed to the sea in violent floods and none remained for irrigation. The sugar-planters realize the dangers of deforestation so keenly that they have not only segregated 150,000 acres of their own land as a forest reserve in addition to the 150,000 set apart by the state, but have agreed, under contract in some cases, to help the Government in reforesting public lands at private expense.

The problem of Hawaii is the same as that of the United States and China. The Merrimac River, for instance, according to the statement of Mr. G. W. Cook in an address before the Forestry Association, though only 110 miles long, turns more spindles and furnishes employment to more people than any other river on earth. The prosperity and happiness of the people along its banks depend upon the steadiness of the water-supply which comes from the White Mountains. During the last two decades the forests of that region have been cut so rapidly that the river is becoming erratic. Twice during the last fifteen years the towns along its banks have suffered from the highest floods ever known, because at times of exceptional precipitation the water is not held back, as it was formerly, by the roots and matted mulch of forests. Between the time of high water there have been periods of unusual drought, and hence of further injury to industry, which would not have occurred if the forests had remained. All parts of the country are suffering likewise. In the Ohio Valley, for instance, the floods in January, 1907, threw 10,000 miners out of work along the Monongahela River, and 3,000 mill-hands were obliged to be idle for a

few days in a neighbouring region. Hundreds of families were forced to live upstairs and to keep skiffs in readiness to take them away if the water rose higher. If the forests had not been recklessly cut, the flood could never have attained such great dimensions. Hence the urgent necessity for the passage by Congress of the bill before the present session for the establishment of forest reserves in the White Mountains and in the Appalachians. The present famine in China is an instructive lesson as to the dangers of deforestation. For centuries the highlands of western China at the head of the Hoang-Ho have been devoid of trees. Therefore, dire floods cause widespread famines, which not only entail untold suffering in China, but demand contributions from the rest of the world. The lack of trees in western China may be due to the deprivations of man, or of flocks, or to climatic conditions. Whatever its cause may be, it is clear that if the mountains of China were well covered with forests the existing famine, with its tendency to cause disorder, emigration, and an unknown string of consequences, would not attain more than a small part of its present severity. China should serve as a timely warning to America.

E. H.

METHODS OF EXPRESSING TOPOGRAPHIC RELIEF.—Col. C. W. Larned, of the U. S. Military Academy, has begun the publication in the *Journal of the Military Service Institution* (May, 1907) of papers entitled "History of Map Making and Topography." Speaking of the two general methods of expressing topographic relief (1) by means of hachures and (2) by contour lines, he says that the latter system is gradually displacing the former. Hachures have the great disadvantage of possessing no exact scale of heights, and, furthermore, they obscure the map by the intrusion of a large number of shading lines which tend to confuse the expression of culture.

The contour system, on the other hand, may equally well be made the basis of an artificial shading applied as a wash or by rubbing with some shading medium of sufficient delicacy not to obscure either the contours or culture. This method of auxiliary shading has been adopted in the latest maps of the General Staff of France.

The maps of the U. S. Geological Survey are excellent examples of the simple contour system and of the very satisfactory expression of relief produced by it in most forms of orography.

The author believes that before very long the leading Governments of the world will adopt standard conventions and methods for the production of maps.

THE TRADE OF 1906.—The Tariff Commission of Great Britain has recently published a Memorandum showing the increase of the trade of 1906 over that of 1905 in the United Kingdom, Germany, France, and the United States. The figures, in millions of pounds sterling, appear below:

	IMPORTS FOR HOME CONSUMPTION.			EXPORTS.			TOTAL TRADE.		
	1905. £	1906. £	inc. p. c.	1905. £	1906. £	inc. p. c.	1905. £	1906. £	inc. p. c.
United Kingdom.....	487.	523.	714	330.	376.	13.6	817.	899.	10.0
Germany.....	336½.	386.	14.0	279.	306.	9.7	615.	692.	12.5
France.....	187.	204.	9.1	190.	200.	5.3	377.	404.	7.8
U. S. A.	237.	262.	10.0	329.	369.	12.2	566.	631.	11.1

These figures represent only the increase in the money value of the articles imported and exported. In order to obtain a correct view of the course of trade in 1906, it is necessary to take into account the fact that prices have been steadily advancing. According to calculations by Mr. Sauerbeck, the rise in the wholesale price of the forty-five principal articles forming 90 per cent. of the total volume of trade amounted to 6.8 per cent. in Great Britain. Thus it appears that the increase in the quantity of articles of trade is much less than the increase in value. Statistics as to the rise of prices are not available for other countries.

E. H.

DR. SIGMUND GÜNTHER, of Munich, has an able paper in the *Jahresbericht* of the Frankfort Geographical and Statistical Society on the progress of geographical knowledge in the past ten years.

THE GEOGRAPHICAL SOCIETY OF LÜBECK celebrates the first quarter of a century of its existence (1882-1907) with a pamphlet giving the history of the Society, including an account of its scientific work, notices of its lecture courses and publications and lists of its honorary and regular members and exchanges. The Society has been especially active in the study of the topography and geology of Lübeck and the surrounding regions.

COMMANDANT LEMAIRE, well known for his scientific surveys in the Congo Free State, delivered an illustrated lecture entitled "Across Central Africa" in September last before the Second Universal Congress of Esperanto in Geneva. The text and illustrations have been reproduced in a handsome quarto, and Commandant Lemaire has sent a copy to the Society. The text is given both in French and Esperanto, and the frontispiece is a photograph of the distinguished explorer.

A MONUMENT to the memory of August Petermann, the founder of the *Mitteilungen*, is to be erected in the Grand Duke's Park, in Gotha, which was the scene of most of his work.

THE BRETHREN PUBLISHING HOUSE of Elgin, Ill., has issued a fifth edition of 10,000 copies of a book entitled "The Other Half of The World," in which one of its missionaries describes a tour of 65,400 miles which he made while visiting the stations of the Society. The peculiarity of the enterprise is that the book is not for sale, but is given to those who subscribe for the missionary publication of the Society.

The Board of Trade Journal (No. 539, 1907) prints lists of the treaty ports and places open to foreign trade in China, Japan, and Corea. They embrace 81 places in China, including the ports of call on the Yangtse and West rivers; 22 in Japan, including Formosa and the Pescadores, and 13 in Corea.

OBITUARY.

M. QUARRÉ REYBOURBON, Vice-President of the Lille Geographical Society, is dead at the age of 82. He had long been active in promoting the work of the Society.

NEW MAPS.

AMERICA.

U. S. GEOLOGICAL SURVEY MAPS.

UNITED STATES.—Geneva-Racine Quadrangle, Wisconsin. Scale, 1:125,000, or 1.9 statute miles to an inch. U. S. Geological Survey, Washington, 1907.

The special interest of this topographic sheet is in the fact that it is a combination of the six sheets (Eagle, Muskego, Bay View, Geneva, Silver Lake, and Racine) originally published on a scale of about a mile to the inch, with a contour interval of twenty feet. By combining these sheets into one larger sheet the scale is reduced one-half from the original publication. The information contained on six sheets is compressed into this smaller sheet, making a map, very convenient to handle, of the celebrated lake region of southeastern Wisconsin. The engraved sheet is 16 by 24 inches in size. It is a beautiful piece of work, and, in the absence of any adequate map of this interesting region in our atlases, the sheet should be widely introduced among that part of the public most interested.

Of the eighty or more lakes included within this area nearly all are in its western half among the Morainic hills. A student of the map will readily recognize the fact that the drainage there is quite irregular, while in the eastern part of the area long and broad ridges extend north and south parallel to the lake shore. Here the topography is of the rolling type, as compared with more rugged forms further west, and here also the drainage is more regular, with main valleys parallel to the lake shore.

U. S. HYDROGRAPHIC OFFICE CHARTS.

Pilot Chart of the North Atlantic Ocean, May, 1907.

NEW YORK CITY.—Sketch of Richmond Borough, City of New York. Showing General Location of Proposed N. Y. and N. J. Bridges. J. B. Lyon Company, Albany, N. Y., 1907.

Illustrates the report of the New York Interstate Bridge Commission. The proposed swing bridges are shown in red, one of them to connect Port Richmond with Bergen Point, which, with a bridge to Manhattan across the Hudson from Hudson Co., N. J., would supply land communication from Staten Island to the centre of Greater New York; the other bridge site is from the west end of the trans-Staten Island Boulevard (Holland Hook) to Elizabethport, which would add to the availability of the waterfront along the Kills, now growing in importance for manufacturing purposes.

CANADA.—Topographic Map. Scale, 1:63,360, or 1. statute mile to an inch. Niagara, Dunnville, and Welland sheets in Province of Ontario. Intelligence Branch, Department of Militia and Defence, Ottawa, 1907.

All sheets of this map show very clearly a great deal of cultural detail. The symbols distinguish, for example, between wooden buildings and those constructed of stone or brick; between telegraph and telephone offices, between churches with spires and those without them, and between roads that are

metalled and those that are not. It is gratifying to see that the distribution of forests is shown.

The publication of these sheets of a new map of Canada by the Surveys Division of the Department of Militia and Defence has only recently begun, and it promises to supply the long-felt need of a good general map of the country.

From information supplied to the *Geographical Journal* (April, 1907) the following statement relating to the preparation for this new map is taken:

Elaborate and exact trigonometrical surveys take a long time to execute and are very costly; so, rather than delay the matter, as the object was to produce, as rapidly as possible, reasonably reliable military maps, a more expeditious system of surveying was decided upon, giving a resulting accuracy sufficient for the purpose. This consisted in running a series of theodolite traverses some 15 miles apart, and adjusted upon triangulation points of the U. S. Lake Survey and the U. S. Coast and Geodetic Survey. To these traverses the topographical detail has been adjusted, the latter being at first filled in by prismatic compass, but now entirely by plane-table surveys on the scale of two inches to a mile. The contours, which are at 25 feet intervals, depend upon lines of spirit-levels run about five miles apart and referred to the datum of the U. S. Coast and Geodetic Survey. These are supplemented by levels run with Abney levels and aneroid readings. As a check upon the foundation work of the map and to ensure greater accuracy, a topographic triangulation has recently been commenced.

Since 1904 about \$20,000 has been expended annually on the work, and about 6,200 square miles of topography have been completed, including the Niagara peninsula, from Hamilton to Port Dover, with the greater portion of Eastern Ontario, a triangle with Ottawa, Gananoque, and Cornwall at its extremities. This triangle is now being extended to embrace another triangle having its apex at Montreal. The sheets, which are on the polyconic projection, are now creditably produced and printed in colours—water, blue; contours, brown; wooded land, green. Very complete information is given by a careful selection of symbols, concerning means of communication, important buildings, and many other matters. Each sheet measures 25 x 18 inches. It is sincerely to be hoped that they will be issued regularly and as rapidly as possible.

MEXICO-UNITED STATES.—Stations along the Land Boundary between Mexico and the United States from the Rio Grande to the Pacific. Scale, 46 statute miles to an inch. *Bulletin* 56 U. S. National Museum, Washington, 1907.

The position of the boundary monuments along the line is shown. A profile of the boundary from the Rio Grande west shows that the highest point of it, over 2,000 meters, is near the western border of New Mexico.

MEXICO-UNITED STATES.—Differentiation Tracts of the Mexican Boundary Line. Scale, 185 miles to an inch. *Bulletin* 56, U. S. National Museum, Washington, 1907.

Symbols are used to show the various types of country through which an expedition from the National Museum collected mammals—*i. e.*, Pacific Coast Tract, Western Desert Tract, Elevated Central Tract, Eastern Desert Tract, Middle Texan Tract, and Tamaulipan Subtropical Tract.

PERU.—Plano del Rio Bajo Marañoñ. Surveyed by first Lieut. Don Pedro Bueno. By order of the Prefect of the Department of Loreto, Colonel Don Pedro Portillo. Scale, 1 nautical mile to 5 mm. *Boletín* of the Geographical Society of Lima, Vol. 19, No. 3, 1906.

The scale of the river's width is augmented three times to facilitate the tracing of the channel. All the rivers of this province which include the Marañoñ and most of the southern rivers that go to form the upper Amazon are being surveyed. The exaggerated scale of this sheet permits a clear definition of the forms of the islands.

AFRICA.

BRITISH AFRICA.—Uganda (Provisional) Sheets, 86-B and 86-F. Scale, 1:250,000, or 3.95 statute miles to an inch. Compiled in the Topographical

Section General Staff. Edward Stanford, Agent, London, 1905. (Price, 1s 6d each.)

Black-and-white sheets showing many native routes and settlements, with elevations in figures and the drainage fully expressed as far as surveyed. Such maps, though provisional, will be extremely useful in the prosecution of further enterprises and to supply important detail for smaller sheets.

FRENCH SOMALI.—Plan de la Ville et du Port de Djibouti. Scale, 275 meters to an inch. *Bulletin of the Committee of French Africa*, No. 4, 1907, Paris

A black-and-white sketch map on a scale sufficiently large to show the plan of the port, the position of the public buildings, the tramway, railroad, shipping etc.

GOLD COAST COLONY.—Gold Coast. (Parts of Sheets 72 and 73.) Scale, 1:1,000,000, or 15.78 statute miles to an inch. Compiled in the Topographical Section, General Staff. Edward Stanford, Agent, London, 1906. (Price, 2s.)

The route of the Government railroad, now in operation to Kumasi, is shown, and the nomenclature along the various routes is large. This sheet completes the provisional mapping, on this scale, of the Gold Coast Colony and its Northern Territories.

SOUTHERN NIGERIA.—Southern Nigeria. Scale, 27 statute miles to an inch. Macmillan & Co., London, 1906.

Illustrates the book, "The Lower Niger and its Tribes," by Major Arthur Glyn Leonard. The map does not show the new boundaries as fixed by the British Government in February, 1906. Its distinguishing feature is that it gives the names not only of the tribes but also of their divisions.

TOGO.—Karte von Togo. Sheets A-2. Tamberma and C-1. Bismarckburg. Scale, 1:200,000, or 3.1 statute miles to an inch. By P. Sprigade. *Mitteilungen aus den Deutschen Schutzgebieten*. Vol. 20, No. 2, Berlin, 1907.

These sheets are a part of the admirable map of Germany's Togo colony, surveys for which have been in progress for about nine years. The map is now nearly completed.

AUSTRALIA.

WESTERN AUSTRALIA.—Geological Map of the Kimberley District. Scale, 12 statute miles to an inch. Ministry of Mines, Perth, 1906.

This excellent map illustrates a report by Dr. R. Logan Jack, on the prospects of obtaining artesian water in the Kimberley District. Colours and other symbols are used to show the position of the geological formations, the wells, and the water prospects. The accompanying letterpress shows the apparent water possibilities in the various geological formations. Dr. Jack passes in review nine distinct areas (defined on the map) in which the search for artesian water is likely to be successful. He believes that artesian water is destined to play an important part in the future of the pastoral industry of the Kimberley District.

CHARTER OF INCORPORATION.

GRANTED APRIL 13, 1854.

The People of the State of New York, represented in Senate and Assembly, do enact as follows:

SECTION 1. George Bancroft, Henry Grinnell, Francis L. Hawks, John C. Zimmerman, Archibald Russell, Joshua Leavitt, William C. H. Waddell, Ridley Watts, S. De Witt Bloodgood, M. Dudley Bean, Hiram Barney, Alexander J. Cotheal, Luther B. Wyman, John Jay, J. Calvin Smith, Henry V. Poor, Cambridge Livingston, Edmund Blunt, Alexander W. Bradford, and their associates, who are now or may become hereafter associated for the purposes of this act, are hereby constituted a body corporate by the name of "The American Geographical and Statistical Society," for the purpose of collecting and diffusing geographical and statistical information.

§2. For the purposes aforesaid, the said Society shall possess the general powers and privileges, and be subject to the general liabilities, contained in the third title of the eighteenth chapter of the first part of the Revised Statutes, so far as the same may be applicable, and may not have been modified or repealed; but the real and personal estate which the said Society shall be authorized to take, hold, and convey, over and above its library, and maps, charts, instruments, and collections, shall not at any time exceed an amount the clear yearly income of which shall be ten thousand dollars.

§3. The officers of said Society shall be a president, three vice-presidents, a corresponding secretary, a recording secretary, a librarian, and a treasurer, and such other officers as may from time to time be provided for by the by-laws of the said Society.

§4. The said Society, for fixing the terms of admission of its members, for the government of the same, for changing and altering the officers above named, and for the general regulation and management of its transactions and affairs, shall have power to form a code of by-laws, not inconsistent with the laws of this State, or of

the United States, which code, when formed and adopted at a regular meeting, shall, until modified or rescinded, be equally binding as this act upon the said Society, its officers, and its members.

§5. The Legislature may, at any time, alter or repeal this act.

§6. This act to take effect immediately.

STATE OF NEW YORK, }
Secretary's Office. } ss.:

I have compared the preceding with the original law on file in this office, and hereby certify the same to be a correct transcript therefrom, and of the whole of said original law.

Given under my hand and seal of office, at the city of Albany, this [L. s.] thirteenth day of April, one thousand eight hundred and fifty-four.

A. G. JOHNSON,
Deputy Secretary of State.

AMENDED CHARTER.

PASSED APRIL 8, 1871.

STATE OF NEW YORK, No. 237, IN SENATE. *March 7, 1871.*—Introduced with unanimous consent, by Mr. Bradley; read twice, and referred to the Committee on Literature; reported favorably from said committee, and committed to the Committee of the Whole.

CHAP. 373.

AN ACT in relation to The American Geographical and Statistical Society.

PASSED April 8, 1871.

The People of the State of New York represented in Senate and Assembly do enact as follows:

SECTION 1. The name or corporate title of the said Society shall hereafter be The American Geographical Society of New York.

§2. The object of the said Society shall be the advancement of geographical science; the collection, classification and scientific arrangement of statistics, and their results; the encouragement of explorations for the more thorough knowledge of all parts of the North American continent, and of other parts of the world which may be imperfectly known; the collection and diffusion of geographical, statistical and scientific knowledge, by lectures, printed publications, or other means; the keeping up of a correspondence with scientific and learned societies in every part of the world, for the collection and diffusion of information, and the interchange of books, charts, maps, public reports, documents, and valuable publications; the permanent establishment in the city of New York of an institution in which shall be collected, classified, and arranged, geographical and scientific works, voyages and travels, maps, charts, globes, instruments, documents, manuscripts, prints, engravings, or whatever else may be useful or necessary for supplying full, accurate, and reliable information in respect to every part of the globe, or explanatory of its geography, physical and descriptive; and its geological history, giving its climatology, its productions, animal,

vegetable, and mineral; its exploration, navigation, and commerce; having especial reference to that kind of information which should be collected, preserved, and be at all times accessible for public uses in a great maritime and commercial city.

§3. The power given by the act hereby accorded to the said Society, to take, hold, convey, manage, and make use of its real and personal estate, shall be understood as authorizing said Society to take and hold by gift, grant, bequest, devise, subject to all provisions of law relative to devises and bequests by last will and testament, or purchase real estate to the value of three hundred thousand dollars, and to invest its income, or its personal estate generally, so as to produce a regular annual income sufficient for the accomplishment of the purposes set forth in the first section of this act; but said annual income shall not exceed twenty-five thousand dollars annually.

§4. The said Society shall make an annual report of its proceedings to the Legislature.

STATE OF NEW YORK, } ss.:
Office of Secretary of State. }

I have compared the preceding with the original law on file in this office, and do hereby certify that the same is a correct transcript therefrom, and of the whole of said original law.

Given under my hand and seal of office, at the city of Albany, this twenty-[L. s.] second day of May, in the year one thousand eight hundred and seventy-one.

DIEDRICH WILLERS, JR.,
Deputy Secretary of State.

LAWS OF NEW YORK.

CHAP. 650.

AN ACT allowing the American Geographical Society of New York to take and hold a larger amount of real and personal property than under previous acts relating to that Society.

BECAME a law May 13, 1895, with the approval of the Governor.
Passed by a two-thirds vote.

The People of the State of New York, represented in Senate and Assembly, do enact as follows:

SECTION 1. The American Geographical Society of New York may hereafter take and hold by gift, grant, purchase, devise or

bequest, subject, except in the matter of income, to all provisions of law relative to devises and bequests by last will and testament, real and personal property to the amount of one million dollars, and any income therefrom accruing, for the uses, purposes and objects of the said society.

.2. This act shall take effect immediately.

STATE OF NEW YORK, }
Office of the Secretary of State. } ss.:

I have compared the preceding with the original law on file in this office, and do hereby certify that the same is a correct transcript therefrom and of the whole of said original law.

JOHN PALMER,
Secretary of State.

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BY-LAWS OF THE AMERICAN GEOGRAPHICAL SOCIETY.

AS AMENDED OCTOBER 23, 1897.

THE following By-Laws are hereby established as the rules and ordinances of the American Geographical Society, and all other By-Laws, Rules and Regulations heretofore made are hereby repealed.

CHAPTER I.

MEMBERSHIP.

1. The Society shall consist of Fellows and of Honorary and Corresponding Members.
2. Honorary Members shall be chosen on account of their distinction in the science of geography, or of statistics, and not more than three of them shall be elected in any one year.
3. Corresponding Members shall be chosen from those who communicate valuable information to the Society and who have promoted the knowledge of geography, or of statistics.
4. Fellows, Honorary Members and Corresponding Members shall be elected by the Society as follows: All nominations of candidates shall be made in writing at a meeting of the Council by a member thereof. The names of persons thus nominated, if approved by the Council, shall be recommended to the Society for election at its next stated meeting.
5. The name of any Fellow or Member of the Society may be dropped from the list by vote of the Council, without reference to the Society.

CHAPTER II.

INITIATION FEE AND ANNUAL DUES.

1. Each Fellow of the Society shall, immediately on election, pay an initiation fee of ten dollars, which shall be considered to include his annual dues for the current year.

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2. The annual dues of each Fellow thereafter shall be ten dollars, payable in advance on the 1st of January.
3. Any Fellow of the Society, not in arrears, may commute for life all dues, by the payment at one time of one hundred dollars.
4. The name of any Fellow of the Society who has neglected for two successive years to pay the annual dues, or who at any time refuses to pay them, may, by the Council, be dropped from the list.
5. The fiscal year of the Society shall be the calendar year commencing January 1, and ending December 31.
6. Honorary and Corresponding Members shall be exempt from payment of initiation fee and annual dues.

CHAPTER III.

OFFICERS.

1. The officers of the Society shall be a president, three vice-presidents, a foreign corresponding secretary, a domestic corresponding secretary, a recording secretary, a treasurer and fifteen councilors; and these together shall form the Council of the Society.
2. All the officers above named shall be elected by the Society at its annual meeting.
3. No one shall be voted for, for any office, unless he has been nominated by the Council, or unless his nomination, made in writing by at least nine Fellows of the Society, has been conspicuously posted in the office of the Society for ten days prior to the date of the Annual Election.
4. The president and treasurer shall each be elected for one year and until their successors have been elected; and at each annual meeting there shall be elected one vice-president, one secretary, and five members of the Council, each for the term of three years and until their successors have been elected.
5. All officers to be elected may be voted for on one ballot.
6. Any Fellow of the Society, who has been such for twenty days and who is not in arrears for dues, shall be entitled to vote at the annual election.

CHAPTER IV.

ANNUAL MEETING.

1. The annual meeting of the Society shall be held on the second Monday in January, or on any other day which may be designated by the Council for the purpose.

2. At the annual meeting the Council shall present a report of the proceedings of the Society during the past year, and the treasurer shall present his annual report.

CHAPTER V.

MONTHLY AND SPECIAL MEETINGS.

1. The Society, unless it is at any time specially ordered otherwise by the Council, shall hold a stated meeting for the transaction of business on the second Monday of each month except July, August, September and October.

2. The president, or, in his absence or incapacity, one of the vice-presidents, may, and upon the written request of the Council or of twenty-five members of the Society shall, call a special meeting of the Society by giving three days' notice thereof in two daily newspapers published in the City of New York.

CHAPTER VI.

ORDER OF BUSINESS.

1. At stated meetings of the Society the order of proceedings shall be:

Reading of the minutes.
Reports and communications from officers of the Society.
Communications from the Council.
Reports from committees.
Election of members.
Miscellaneous business.
Papers and Addresses.

2. All propositions presented to the Society at any meeting, for action, shall be in writing. A proposition thus presented, when seconded, shall be deemed to be in possession of the Society and open for discussion, but may be withdrawn by the mover at any time before amendment or decision.

3. No member shall speak more than five minutes, nor more than once, upon the same question, until all other members present have had an opportunity to be heard, nor more than twice on any question, unless leave is specially granted by the Society.

CHAPTER VII.

QUORUM.

1. At meetings of the Society nine members present shall constitute a quorum.

CHAPTER VIII.

COMMITTEES.

1. Each committee authorized by the Society shall consist of three members, who shall, unless otherwise ordered, be appointed by the chairman.

CHAPTER IX.

PRESIDING OFFICER.

1. At all meetings of the Society, on the arrival of the appointed hour and the presence of a quorum, the president, or, in his absence, one of the vice-presidents, or, in the absence of all of these officers, a Fellow of the Society, shall take the chair and call the meeting to order.

2. The chairman shall have only a casting vote. He shall preserve order and decide all questions of order, subject to an appeal to the Society. At every annual meeting, before the opening of the polls, he shall appoint two tellers of the election. In case of a contest, he may declare the election postponed to the next meeting, in order that a corrected poll list may be prepared by the secretary and verified by the Council; but only one such postponement shall be made.

CHAPTER X.

SECRETARIES.

1. It shall be the duty of the Foreign Corresponding Secretary to conduct the correspondence of the Society with individuals and associate bodies in foreign countries.

2. It shall be the duty of the Domestic Corresponding Secretary to conduct the correspondence of the Society with individuals and associate bodies in the United States.

3. In case of vacancy in the office of either of the corresponding secretaries, or in the absence or disability of either of these officers, the duties of either may be performed by the other secretary, or by the librarian.

4. The secretaries shall keep in books at the rooms of the Society copies of all letters written by them, and shall file at the said rooms all letters received by them on behalf of the Society.

5. At each stated meeting of the Council they shall respectively report their correspondence, and read the same or such parts thereof as may be required.

6. The Council may designate a particular officer, or appoint a

committee, to prepare a letter or conduct a correspondence on any special subject.

7. It shall be the duty of the Recording Secretary to give due notice of all meetings of the Society and to attend the same. He shall keep adequate minutes of the proceedings of the Society. He shall give immediate notice to officers and committees of all votes, orders, resolves, and proceedings affecting them or pertaining to their respective duties. He shall at each annual election hand to the tellers a list of the members of the Society entitled to vote. He shall have charge of the seal of the Society and of the charter, by-laws, records and general archives, except so far as they may be placed by the Council in charge of others. He shall sign and affix the seal of the Society to all diplomas, deeds or other documents authorized by the Society or Council.

8. All documents in charge of the secretaries shall be kept at the rooms of the Society, unless otherwise specially ordered by the Council.

CHAPTER XI.

TREASURER.

1. The Treasurer shall have charge of all deeds, contracts, bonds, certificates, securities and muniments of title belonging to the Society. He shall collect all dues to the Society and keep the funds safely deposited in some incorporated bank or trust company approved by the Council.

2. Funds so deposited shall be drawn out only by check of the Treasurer, countersigned by the chairman of the Council, or by such other officer as may be designated by the Council for that purpose.

3. The Treasurer shall, prior to the annual meeting of the Society, prepare and submit to the Council for audit a detailed account of his receipts and disbursements during the past year, which account, duly audited and approved, he shall present to the Society at the annual meeting.

CHAPTER XII.

COUNCIL.

1. The Council shall have the management and control of the affairs, property, library, and funds of the Society, and shall transact all such business of the Society as is not required to be transacted by the Society at a stated meeting. It shall designate a bank or trust company in the City of New York in which the funds shall be

deposited by the treasurer. It shall have charge of and edit all the publications of the Society.

2. It may adopt rules for its own government, not inconsistent with the charter and by-laws of the Society; and appoint such standing and special committees as it may deem proper, and define their duties. It shall appoint the librarians, clerks and other servants of the Society, and fix the powers, duties, privileges and compensation of each. But no appointment shall be made which shall not be revokable at the pleasure of the council.

3. It shall have power to fill for the unexpired term any vacancy that may occur in its own body or in any of the offices of the Society, and it may declare a vacancy to exist in any office whenever the incumbent thereof is, by reason of absence or otherwise, incapable of performing its duties. It shall have power to declare vacant the seat of any member of its own body (except the president and vice-presidents) who shall have been absent from its meetings for three successive months.

4. The Council may for good cause remit the annual dues of any Fellow of the Society.

5. No member of the Council shall, directly or indirectly, receive any salary or pecuniary compensation for his services to the Society.

CHAPTER XIII.

ALTERATION OF BY-LAWS.

No alteration in these by-laws shall be made, unless proposed in writing at a stated meeting of the Society and referred to the Council for consideration, and approved by the Council and adopted by the Society at a subsequent meeting.

HONORARY AND CORRESPONDING MEMBERS AND FELLOWS.

HONORARY MEMBERS.

DAVIS, WM. MORRIS, Harvard University.
HARMSWORTH, Alfred Charles, London.
McCLINTOCK, Admiral Sir F. L., R.N., K.C.B.
MARKHAM, Sir Clements R., K.C.B.

MENDENHALL, Thomas C., Ph.D.
MURRAY, Sir John, K.C.B., Edinburgh.
NANSEN, Dr. Fridtjof, Christiania.
NARES, Vice-Admiral Sir George S., R.N., K.C.B.
PEARY, Commander Robert E., U.S.N.

CORRESPONDING MEMBERS.

ABBE, Prof. Cleveland, Washington.
BONAPARTE, Prince Roland, Paris.
BREWER, Prof. Wm. H., New Haven.
BROWNLEE, J. Harrison, C. E.
CHAILLÉ LONG, Col. C.
CHAIX, Prof. Emile, Geneva, Switzerland.
CORA, Guido, Rome.
DAVIDSON, Prof. George, San Francisco.
GANNETT, Henry, Washington.
GARDNER, Prof. James T., Albany.
GILLIOTTE VAN SEVEREN, L., LL.D., Bruges.
GILMAN, Daniel C., LL.D., Baltimore, Md.
GOBAT, Dr. A., Nat. Councillor, Berne.
GRIGORIEV, Alex. V., Imp. Russian Geographical Society, St. Petersburg.
HUNT, William H., Tamatave, Madagascar.

JACKSON, Frederick George, London.
LAPPARENT, Prof. A. de, Paris.
LECLERCQ, Jules, Brussels.
LUCE, Rear-Admiral S. B., U.S.N.
LUMHOLTZ, Carl, M.A., New York.
PEET, Rev. S. D., Chicago, Ill.
PERALTA, Manuel M. de, Paris.
PROUT, Henry G.
PUMPELLY, Prof. Raphael.
SEMONOV, Peter P., Vice-Prest. Imp. Russ. Geog. Soc., St. Petersburg.
TACHÉ, E. E., Asst. Commissioner of Crown Lands, Quebec.
VIGNAUD, Henry, Paris.
VINCENT, Frank, New York.
VON DEN STEINEN, Prof. Dr. Karl, Berlin.
WILLIAMS, Horace E., São Paulo, Brazil.
WYSE, Liuet.-Com. Lucien N. B.

FELLOWS.

JUNE 30, 1905.

Names of Life Fellows are printed in italics.

Date of Election.

- 1889 *Abbot, Edwin H.*
- 1902 Acheson, Edward G.
- 1902 Ackerman, Ernest R.
- 1892 Adams, Cyrus C.
- 1903 *Adams, Edward D.*
- 1891 Agar, John G.
- 1906 Agassiz, G. R.
- 1904 Agens, Frederick G.
- 1885 Agnew, Andrew G.
- 1886 Alden, R. Percy.
- 1898 *Aldrich, Mrs. James Herman.*
- 1898 Alexander, Harry, E.E., M.E.
- 1888 Alexander, J. F.
- 1898 Allen, W. F.
- 1903 Allen, William Porter.
- 1898 *Allin, F. Brevoort.*
- 1904 Amend, Robert F.
- 1883 Ames, Adelbert.
- 1903 Amundson, John A.
- 1890 *Anderson, Arthur A.*
- 1897 Anderson, A. J. C.
- 1890 Andreini, J. M.
- 1906 Andrews, Wm. H.
- 1887 Andrews, Wm. L.
- 1905 *Anthony S. Reed.*
- 1898 Appleton, Herbert.
- 1887 *Archbold, John D.*
- 1904 Archer, George A.
- 1904 Arend, Francis J.
- 1891 Arms, George.
- 1898 Armstrong, Charles P.
- 1891 Armstrong, Collin.
- 1906 *Armstrong, Samuel T., M.D.*
- 1899 Arnold, Benjamin Walworth.
- 1895 Arnot, M. H.
- 1890 Astor, John J.
- 1874 *Astor, William W.*
- 1891 Atkinson, John B.
- 1883 *Atterbury, J. T.*
- 1903 Atwater, James C.
- 1904 Avery, Stephen.

Date of Election.

- 1899 *Aycrigg, B. Arthur.*
- 1897 Ayer, James C., M.D.
- 1874 *Backus, Henry C.*
- 1886 Backus, J. Bayard.
- 1903 Bacon, Daniel.
- 1904 Bacon, Francis H.
- 1882 *Bacon, Francis M.*
- 1897 Bacon, Selden.
- 1897 *Bailey, Miss Allegra Nathalie.*
- 1904 Bailey, Edward G.
- 1904 Baker, A. G.
- 1902 *Baker, B. N.*
- 1899 Baker, O. M.
- 1900 *Balch, Edwin S.*
- 1904 Balch, Glen E.
- 1881 *Baldwin, Edwin.*
- 1874 *Baldwin, Townsend B.*
- 1899 Baldwin, William D.
- 1888 *Bancroft, H. H.*
- 1884 Bangs, Fletcher H.
- 1905 Banks, A. Bleecker.
- 1868 *Banks, David.*
- 1882 *Barger, Samuel F.*
- 1889 Baring, Thomas.
- 1906 Bartley, Charles B.
- 1890 Barnard, John F.
- 1898 Barnes, Chas. J.
- 1874 Barnes, John S.
- 1904 Barnes, Oliver W.
- 1905 *Barney, Edgar S.*
- 1882 Barney, N. C.
- 1874 Barr, William.
- 1906 Barrett, John.
- 1904 Barringer, Daniel Moreau.
- 1887 *Barron, John C., M.D.*
- 1888 Barstow, J. Whitney, M.D.
- 1878 *Barton, Oliver Grant.*
- 1899 *Bartow, Charles S.*
- 1905 Bastin, J. E.
- 1898 Batchelor, Charles.

Date of Election.

1906 Battelle, J. G.
 1906 Bayliss, John Y.
 1895 Beal, William R.
 1904 Beaman, George Herbert.
 1904 Beaman, Mrs. Charles C.
 1901 Beckley, John N.
 1886 Beddall, Edward F.
 1875 Beekman, Gerard.
 1888 Beers, M. H.
 1874 Belding, Milo M., Sr.
 1897 Belding, Milo M., Jr.
 1891 Belin, Henry, Jr.
 1901 Belknap, Henry.
 1900 Bell, Alexander Graham.
 1900 Bell, Bertrand F.
 1897 Bell, Dr. Raley H.
 1883 Bell, Capt. William R.
 1904 Bellows, Horace M., M.D.
 1905 Belmont, Perry.
 1890 Benedict, James H.
 1903 Bennett, Frederick W., C.E.
 1868 Bennett, James Gordon.
 1906 Bennett, John H.
 1906 Berner, Charles E.
 1891 Bernheim, Gustav.
 1903 Bernheimer, Charles L.
 1890 Bertschmann, J.
 1886 Berwind, Edward J.
 1891 Besly, Chas. Howard.
 1875 Beste, Henry.
 1869 Bickmore, Prof. A. S.
 1874 Bien, Julius.
 1904 Bigelow, Henry B.
 1889 Bigelow, Poulney.
 1887 Biglow, Lucius H.
 1906 Billings, Richard.
 1903 Binney, Harold.
 1893 Birdsall, Mrs. W. R.
 1905 Bishop, Heber R.
 1906 Bishop, Rev. Samuel H.
 1905 Bissell, Clinton T.
 1904 Blackmore, Henry Spencer.
 1905 Blaine, William T.
 1906 Blair, C. Ledyard.
 1898 Blake, Theodore A.
 1878 Bliss, Cornelius N.
 1890 Bliss, D. L.
 1901 Bliss, William H.
 1895 Boas, Emil L.
 1891 Bogue, Virgil G.

Date of Election.

1886 Bond, Frank S.
 1905 Bond, Stephen N.
 1905 Bonilla, Luis Enrique.
 1884 Bonner, G. T.
 1904 Bonsal, Stephen.
 1904 Bookman, Samuel, Ph.D.
 1874 Bookstaver, Henry W.
 1899 Booraem, John V. V.
 1859 Boorman, J. Marcus.
 1906 Borie, Adolphe E.
 1900 Bormay, W. J.
 1886 Bouvier, M. C.
 1902 Bowditch, Charles P.
 1904 Bowditch, Ernest W.
 1900 Bowdoin, George S.
 1904 Bowdoin, Temple.
 1886 Bowers, John M.
 1883 Bowne, Walter.
 1890 Brackenridge, George W.
 1904 Bradford, Sidney.
 1904 Bradley, Arthur C.
 1895 Bradley, Edson.
 1904 Bragaw, E. T.
 1897 Brainard, Lt.-Col. David L., U. S. A.
 1899 Brétt, George P.
 1890 Brewster, C. O.
 1904 Brewster, George S.
 1902 Brewster, Robert S.
 1886 Bridgman, E. C.
 1900 Bridgman, Herbert L.
 1905 Briscoe, Willis A.
 1903 Brizse, Charles N.
 1889 Bromberg, Frederick G.
 1890 Brooker, Chas. F.
 1904 Brooks, Alfred H.
 1906 Brooks, John F.
 1886 Brown, Addison.
 1905 Brown, Ammi.
 1904 Brown, Rev. Clement.
 1905 Brown, Davenport.
 1903 Brown, F. Q.
 1878 Brown, J. Romaine.
 1878 Brown, Rev. Philip A. H.
 1887 Brown, Robert I.
 1904 Brown, William L.
 1875 Brownell, Silas B.
 1874 Brownson, Rear Adm. W. H., U.S.N.
 1901 Bruce, Miss Matilda W.

Date of Election.

1901 *Bruce-Brown, William.*
 1904 Bruggerhof, F. W.
 1901 Bruguière, Louis Sather.
 1902 Buchanan, James Isaac.
 1905 Buel, John L., M.D.
 1900 Bulkley, Justus L.
 1903 Bunker, George R.
 1897 Burdge, Franklin.
 1902 *Burrage, Albert C.*
 1902 *Burrage, Albert C., Jr.*
 1902 *Burrage, Francis H.*
 1902 *Burrage, Russell.*
 1903 Burton, Prof. A. E.
 1899 Busby, Leonard J.
 1905 Bushnell, H. D.
 1902 Butes, Alfred.
 1906 Butler, Chas. S.
 1895 Butler, Joseph G., Jr.
 1905 Butler, M. J., LL.B., C.E.

 1901 Cabell, Walter Coles.
 1903 Caesar, Henry A.
 1897 Cameron, W. L.
 1888 Canda, Charles J.
 1887 Cannon, H. W.
 1884 Carey, Henry T.
 1907 Carey, Henry W.
 1904 Carnegie, Andrew.
 1901 Carnegie, George L.
 1904 Carnegie, Thomas M.
 1905 Carpenter, Franklin R., Ph.D.
 1889 Carter, John J.
 1897 Cassard, William J.
 1899 Chace, George A.
 1906 Chadbourne, Wm. M.
 1897 Chamberlain, Rev. John.
 1897 Chamberlain, Rev. Leander T.
 1899 Chambers, Arthur D.
 1897 Chambers, Frank R.
 1906 Champ, Wm. S.
 1906 Champollion, André.
 1904 Chancellor, William E.
 1905 Chanler, John Armstrong.
 1890 Chanler, William Astor.
 1905 Channing, J. Parke.
 1897 Chapin, Chester W.
 1883 Chapman, Henry E.
 1868 Chapman, Joseph H.
 1888 Chase, George.
 1904 Chatfield-Taylor, H. C.

Date of Election.

1886 *Chauncey, Elihu.*
 1906 Chew, Beverly.
 1899 Chisholm, Hugh J.
 1888 Chisolm, George E.
 1906 Choate, Joseph H.
 1874 *Church, Col. George Earl.*
 1897 Church, George H.
 1884 *Claflin, John.*
 1891 Clapp, George H.
 1905 Clark, Alzamore H.
 1905 Clark, Frank E.
 1887 Clark, Jefferson.
 1901 Clark, W. A.
 1886 Clarke, C. C.
 1882 *Clarkson, Banyer.*
 1889 Clausen, George C.
 1904 Cleland, Frank Benedict.
 1883 Clews, Henry.
 1883 Clyde, William P.
 1905 Cobb, Sanford E.
 1890 Cockcroft, Miss Mary T.
 1897 Coffin, C. A.
 1886 Coffin, Edmund.
 1906 Coffin, Edward Russell.
 1891 Cogswell, W. B.
 1900 Cole, Edward H.
 1901 Cole, George Watson.
 1886 *Colvin, Verplanck.*
 1897 Combe, Mrs. William.
 1892 Comer, John H.
 1897 *Comstock, Frederick H.*
 1889 Comstock, George Carlton.
 1899 Condon, Thomas G.
 1886 Conger, Clarence R.
 1884 Connor, W. E.
 1874 *Conyngham, William L.*
 1898 Cook, Eugene B.
 1894 Cok, Dr. Frederick A.
 1893 Coolidge, J. Randolph.
 1903 Cornell, Russell R.
 1902 Corning, C. R.
 1897 Corning, G. M.
 1905 Corning, Parker.
 1886 Cortell, Elmer L.
 1902 Cotton, Louis K.
 1888 *Coutan, Charles Albert.*
 1905 Coutant, Dr. Richard B.
 1905 Cowee, Harvey D.
 1906 Cowperthwait, Herbert M.
 1899 Cox, John Lyman.

Date of Election.

1902 *Coxe, Eckley B., Jr.*
 1905 *Craigie, A. Walpole.*
 1901 *Crain, Dunham Jones.*
 1902 *Cramp, Charles H.*
 1904 *Crane, Albert.*
 1889 *Crane, Charles R.*
 1906 *Crane, George F.*
 1902 *Crane, Zenas.*
 1887 *Cranitch, William I. A.*
 1905 *Crile, George, M.D.*
 1888 *Crimmins, John D.*
 1899 *Crimmins, T. E.*
 1906 *Cronise, Frank M.*
 1874 *Crosby, J. Schuyler.*
 1901 *Crozier, Capt. William.*
 1906 *Crozier, Wm. Armstrong.*
 1903 *Cuntz, J. H.*
 1905 *Curtis, George Carroll*
 1906 *Curtis, Thos. H.*
 1901 *Curtis, William Edmond.*

 1884 *Dalley, Henry.*
 1906 *Dalton, H. G.*
 1871 *Daly, Joseph F.*
 1906 *Damron, Wm. C.*
 1905 *Dana, Richard T.*
 1901 *Dana, Samuel B.*
 1903 *Dana, William B.*
 1895 *Daniels, Charles H.*
 1892 *Daniels, W. L.*
 1906 *Darlington, Thos.*
 1898 *Davidson, James W.*
 1875 *Davies, Julien T.*
 1906 *Davis, Ch. Henry.*
 1906 *Davis, Daniel A.*
 1884 *Davis, Howland.*
 1877 *Davis, Joseph Beale.*
 1905 *Day, William S.*
 1905 *Dean, Mrs. Bashford.*
 1880 *Deane, John H.*
 1892 *DeBuys, A.*
 1901 *de Coppet, Henry.*
 1880 *Deen, William M.*
 1895 *De Kalb, Courtenay.*
 1900 *Delafield, Albert.*
 1874 *Delafield, M. L.*
 1903 *de Lemos, Theodore W. E.*
 1890 *Dellinger, Charles F.*
 1906 *Denholm, W. J.*
 1901 *Dennis, Rev. James S.*

Date of Election.

1899 *Dennis, John B.*
 1901 *Dennis, Samuel S.*
 1905 *de Peyster, Frederic Ashton.*
 1880 *Dexter, Henry.*
 1904 *Dey, Anthony.*
 1903 *Dick, Evans R.*
 1894 *Dieterich, Charles F.*
 1897 *Dillingham, Edwin R.*
 1905 *Dimmick, J. Benjamin.*
 1905 *Dimock, George E.*
 1899 *Diven, George M.*
 1886 *Dix, Morgan, D.D.*
 1904 *Dix, Samuel M.*
 1881 *Docharty, Augustus T.*
 1897 *Dodge, Rev. D. Stuart.*
 1903 *Dodge, Gen. Grenville M.*
 1896 *Dodge, Richard E.*
 1901 *Dodge, Walter Phelps.*
 1893 *Dodson, Robert Bowman.*
 1875 *Dommerich, L. F.*
 1889 *Donald, Peter.*
 1899 *Doremus, Robert P.*
 1897 *Doughty, Mrs. Alla.*
 1884 *Douglas, James.*
 1903 *Douglass, R. D.*
 1905 *Dowling, Robt. E.*
 1888 *Drexel, Mrs. Joseph W.*
 1891 *Drey, Max.*
 1880 *Du Bois, Frederick N.*
 1874 *Du Bois, William A.*
 1898 *Dunham, Edward K., M.D.*
 1897 *Dunnell, William N., D.D.*
 1905 *Dunning, Clement S.*
 1906 *Du Pont, Alexis I.*
 1889 *Du Pont, Col. H. A.*
 1901 *Durand, John S.*
 1889 *Durkee, Eugene W.*
 1894 *Duvall, William C.*
 1889 *Dwight, Jonathan, Jr., M.D.*

 1886 *Easton, Robert T. B.*
 1905 *Eaton, Charles Edwin.*
 1902 *Eberstadt, Edward F.*
 1904 *Eccles, Robert G., M.D.*
 1880 *Eckert, Gen. Thomas T.*
 1905 *Eckert, T. T., Jr.*
 1906 *Eddy, Spencer.*
 1904 *Edwards, Arthur M., M.D.*
 1882 *Edwards, J. Pierrepont.*
 1887 *Egleston, Melville.*

Date of Election.

1905 Eickemeyer, Carl.
 1897 Eimer, August.
1901 Eldert, Cornelius.
1901 Eldridge, Lewis A.
 1900 Eldridge, Roswell.
 1887 Elkins, S. B.
1879 Elliott, Samuel.
 1886 Ellis, George W.
 1875 Ellis, John W.
1882 Ellis, Wilbur Dixon.
1903 Ellis, William H.
1882 Emerson, John W.
 1904 Emmons, Arthur B.
1903 Endicott, William C.
 1883 Eno, Amos F.
 1906 Entz, George Gilbert.
1903 Eskesen, Eckhardt V.
 1906 Estabrook, A. F.
1891 Eustis, W. E. C.
 1906 Evers, Cecil C.
 1891 Eyerman, John.

1903 Fahnestock, Gates D.
 1905 Fahs, Ch. H.
1882 Fairbanks, Leland.
1890 Fairchild, Chas. S.
1892 Fairchild, Samuel W.
1902 Fairleigh, David W.
1875 Fargo, James C.
1905 Farish, John B.
 1906 Farley, Robt. Emmet.
1906 Farnham, Paudling.
1901 Farnsworth, William.
1896 Farquhar, Edward Y.
1874 Farragut, Loyall.
1903 Faulkner, Charles J.
1890 Fearing, Daniel B.
1898 Fearons, Geo. H.
1898 Ferguson, Henry.
1888 Ferguson, Walton.
1906 Ferry, Mansfield.
1907 Fiala, Anthony.
1900 Fischer, Emil S.
1901 Fischer-Hansen, Carl.
1904 Fish, Charles Henry.
1902 Fisk, Harvey Edward.
1902 Fisk, Pliny.
1903 Fitzgerald, Frank T.
1886 Flagler, H. M.
1907 Fleischmann, Max C.

Date of Election.

1889 Flint, Chas. R.
1901 Flower, Anson R.
1901 Flower, Frederick S.
 1906 Floyd-Jones, G. Stanton.
1875 Folsom, George W.
1875 Ford, James B.
1905 Foster, Frederic deP.
1901 Fowler, Jonathan Odell, Jr.
1906 Fowler, Thos. Powell.
1874 Fox, Austen G.
1906 Franke Frederick R.
1884 Frazer, Alfred.
1873 Freedman, John J.
1889 Freeland, Theodore H.
1894 Frick, John.
1902 Frisseli, A. S.
1904 Fritz, Horace H.
1906 Frye, Jed.
1875 Fuller, Charles D.

1903 Gaff, Thomas T.
1889 Gage, E. B.
1905 Gaines, David H.
1886 Gallatin, Frederic.
1904 Gammell, William.
1904 Garrett, Robert.
1897 Garver, John A.
1903 Gates, Isaac E.
1891 Gay, Edward.
1879 Gay, Joseph E.
1905 Geer, Robert C.
1906 Geil, Wm. Edgar, M.A.
1905 Gennert, Miss Helen L.
1868 Gerry, Elbridge T.
1889 Gest, Erasmus.
1874 Gibbs, Theodore K.
1903 Gibney, John R.
1906 Gielow, Henry J.
1901 Gilbert, Clinton.
1889 Gilbert, G. K.
1893 Gilbert, J. H. Grenville.
1903 Gilman, Theodore P.
1906 Glatz, Charles.
1885 Glazier, Simon W.
1897 Gleason, John J.
1904 Glidden, Charles J.
1897 Golding, John Noble.
1905 Goldsborough, John Byron.
1904 Goodhart, Philip J.
1898 Goodnow, Harold P.

Fellows.

Date of Election.

1900 Goodridge, F. G., M.D.
 1898 Goodwin, Rev. Francis.
 1886 *Goodwin, James J.*
 1887 Gossler, Gustav H.
 1887 Gould, George J.
 1905 Granbery, Julien Hastings.
 1899 Grant, F. E.
 1906 Grant, Jesse R.
 1905 Grant, Madison.
 1904 *Graves, George Coe.*
 1895 Greeff, Ernest F.
 1906 Green, Francis C.
 1901 Green, Pinckney F.
 1883 *Greenough, John.*
 1856 Greenwood, Isaac J.
 1892 Greenwood, Langdon, Jr.
 1897 Grossmann, Ignatius R.
 1897 Gruber, Abraham.
 1903 Guggenheim, Simon.
 1904 *Gunther, Bernard G.*
 1886 *Gunther, Franklin L.*

 1891 Haas, Kalman.
 1906 Hadden, John A., Jr.
 1887 Hague, James D.
 1874 *Haines, John P.*
 1901 Hall, Rev. Dr. Charles Cuthbert.
 1906 Hall, Harry Alvan.
 1905 Hall, James P.
 1903 Hamilton, Edmond H.
 1879 Hamilton, William Gaston.
 1905 Hammond, John Henry.
 1904 Hansmann, Carl A.
 1888 Harbeck, Charles T.
 1888 Hard, Anson W.
 1905 Hardenbergh, William P.
 1901 Hardie, Wainwright.
 1900 Harding, Edward.
 1900 Hardley, J. Wheeler.
 1902 Hare, J. Knowles.
 1903 Harrison, Hugh H.
 1906 Hart, Richard P.
 1897 Hart, Walter T.
 1905 Hartzell, J. Culver.
 1906 Harvey, Leroy.
 1903 Harvey, Miss Rebecca.
 1882 Hascall, Theodore F.
 1887 Hastings, Thomas S., D.D.
 1904 Haupt, Louis, M.D.
 1905 Havemeyer, H. O., Jr.

Date of Election.

1859 *Havemeyer, John C.*
 1902 *Havemeyer, William F.*
 1894 Haven, J. Woodward.
 1889 Haynes, Henry W.
 1891 Hazard, Frederick R.
 1906 Hazard, Rowland Gibson.
 1898 *Hearn, Arthur H.*
 1897 *Hearn, George A.*
 1905 Heath, H. E., E.E.
 1883 *Hebert, Henry B.*
 1902 Hedge, Frederic H.
 1903 Heimann, Julius.
 1897 Heinheimer, L. A.
 1905 Heinse, F. Augustus.
 1902 Henderson, Charles R.
 1886 Henderson, Harold G.
 1874 Hendricks, Edmund.
 1901 Hentz, Henry.
 1899 *Herbert, John W.*
 1903 Herrmann, Nathan.
 1900 Herzog, F. Benedict, Ph.D.
 1904 Hess, Selmar.
 1904 Heurich, C.
 1903 Hewitt, Peter Cooper.
 1900 Hewlett, Walter Jones.
 1901 Heydt, Herman A.
 1906 Hickey, Jas. H.
 1906 Higginson, Adm. Francis J.,
 U. S. N., Retired.
 1882 Higginson, James J.
 1894 Hildreth, J. Homer.
 1903 Hill, Charles B.
 1890 Hill, James J.
 1886 Hillhouse, Thomas G.
 1904 *Himmelwright, A. L. A.*
 1887 Hinchman, Walter.
 1881 Hinman, Russell.
 1903 *Hirsch, Robert B.*
 1904 Hitchcock, E. A.
 1904 Hitchcock, Mrs. Roswell D.
 1889 *Hitchcock, Welcome G.*
 1905 Hobby, C. M., M.D.
 1904 Hoe, Alfred G.
 1886 Hoe, Robert.
 1897 Hoe, William A.
 1876 Hoes, William M.
 1897 Hoey, Rev. Joseph L.
 1901 Hoffman, Charles F., Jr.
 1872 *Holbrook, Levi.*
 1904 Holland, Joseph.

Date of Election.	Date of Election.
1876 Holt, Henry.	1886 Janeway, Henry L.
1902 Holton, Henry D.	1890 Janin, Henry.
1901 Hopkins, George B.	1891 Jaques, W. H.
1896 Hoppin, Hamilton L.	1906 Jarves, Deming.
1897 Hoppin, Samuel Howland.	1903 Jarvie, James N.
1896 Hotchkiss, Miss C. W.	1905 Jay, John.
1898 Howell, M. D.	1879 Jay, William.
1905 Hoxie, William D.	1887 Jenkins, Augustus S.
1888 Hoyt, Henry R.	1893 Jenkins, Michael.
1905 Hoyt, Samuel N.	1906 Jenkins, V. Clement.
1906 Hubbard, Geo. D.	1895 Jennings, Oliver G.
1906 Hubbard, John.	1902 Jessup, Henry W.
1898 Hubbard, Robert J.	1874 Jesup, Morris K.
1901 Hubbard, Thomas H.	1880 Jewett, George L.
1885 Hubbard, Walter.	1906 Jewett, W. K.
1900 Hudnut, Richard A.	1881 Johnson, Bradish.
1897 Humphreys, Alexander C., M.E.	1901 Johnson, Edward C.
1893 Huntington, Archer M.	1893 Johnson, Reverdy.
1893 Hurlbut, Theodore D.	1905 Johnson, Willis Fletcher, L.H.D.
1898 Hurley, Thomas J.	1906 Jones, Chas. Landon.
1883 Hurry, Edmund Abdy.	1906 Jones, Dwight A.
1889 Hurt, Frank D.	1888 Jones, Oliver L.
1890 Husted, Seymour L., Jr.	1885 Juilliard, A. D.
1897 Huyler, John S.	1901 Julian-James, Mrs. Cassie.
1901 Hyde, Augustus L.	1904 Jungmann, J., M.D.
1892 Hyde, Clarence M.	1906 Junkin, J. de F., Jr.
1883 Hyde, E. Francis.	1905 Just, John A.
1897 Hyde, Dr. Frederick E.	
1901 Hyde, James H.	
1905 Iddings, Andrew S.	1898 Kahn, O. H.
1905 Iddings, Daniel W.	1881 Kane, Grenville.
1899 Insull, Samuel.	1893 Kane, Henry Brevoort.
1899 Ireland, J. de Courcy.	1904 Kaufmann, Mort J.
1859 Ireland, John B.	1895 Kean, Hamilton F.
1890 Irving, Walter.	1880 Keene, James R.
1874 Iselin, Adrian, Jr.	1888 Kellogg, Charles.
1887 Isham, Charles.	1897 Kemmerer, M. S.
1881 Ives, Brayton.	1903 Kemp, James Furman.
1903 Ives, Frederick D.	1873 Kennan, George.
1903 Jackson, A. Wendell.	1901 Kennedy, E. G.
1904 Jackson, John B.	1901 Kennedy, George G., M.D.
1886 Jackson, Rev. Samuel M.	1888 Kennedy, H. Van Rensselaer.
1897 Jackson, Theodore F.	1881 Kennedy, John S.
1886 Jacobi, Abraham, M.D.	1901 Kent, William.
1891 Jaffray, Robert.	1904 Kenyon, Robert N.
1894 James, Arthur Curtiss.	1906 Kenyon, Wm. Houston.
1874 James, D. Willis.	1885 Keppler, Rudolph.
1890 James, Walter B., M.D.	1903 Kerr, John B.
	1883 Kerr, Walter.
	1887 Kevan, William.
	1886 Kidder, Camillus G.

Date of Election.

1904 Kidder, Edward H.
 1897 Kimball, Alfred R.
 1883 King, D. H., Jr.
 1874 King, Edward.
 1882 King, George Gordon.
 1892 King, John Hurtin.
 1904 King, W. Nephew.
 1901 Kirby, Thomas E.
 1881 Kirsch, Louis.
 1888 Kissel, Gustav E.
 1906 Kittredge, Geo. L.
 1905 Klepetko, Frank.
 1907 Kleybolte, Rudolph.
 1904 Knapp, Dr. Herman.
 1887 Knight, George T.
 1901 Kohlman, Charles.
 1897 Kohn, S. H.
 1901 Kohnstamm, Emil V.
 1906 Kuhn, August.

 1897 Lachman, Samson.
 1905 La Fétra, Linnaeus Edford, M.D.
 1895 Landon, Francis G.
 1898 Lane, Wolcott G.
 1882 Langdon, Woodbury.
 1881 Langdon, Woodbury G.
 1882 Lapham, Lewis H.
 1904 Laughlin, George M.
 1901 Lawrence, Arthur, D.D.
 1897 Lawrence, Cyrus J.
 1902 Lawrence, John Burling.
 1904 Lawrence, W. B.
 1903 Lawson, Victor F.
 1906 Lawton, Jas. M.
 1886 Leete, C. H.
 1906 Leffingwell, Rev. C. W., D.D.
 1900 Leggett, Francis H.
 1903 Lehmaier, James M.
 1905 Lemon, J. S.
 1903 Lesher, Arthur L.
 1901 Leupp, William H.
 1902 Leverich, S. Duncan.
 1904 Levi, Emil S.
 1891 Levine, Julius.
 1896 Lewis, Clarence McK.
 1902 Lewis, Rev. William G. W.
 1881 Libbey, William.
 1903 Lincoln, Lowell.
 1898 Lincoln, Solomon.
 1902 Linderman, Garrett B.

Date of Election.

1905 Lindsey, Edward.
 1899 Lippincott, Henry H.
 1903 Lisman, Frederick J.
 1881 Little, Joseph J.
 1897 Livingston, Goodhue.
 1897 Lobenstine, William C.
 1901 Lockman, Myron A.
 1904 Lodge, Henry Cabot.
 1900 Loeb, Morris.
 1870 Loew, Frederick W.
 1891 Loewy, Benno.
 1906 Loines, Stephen.
 1903 Lorillard, Pierre.
 1890 Loth, Joseph.
 1878 Loubat, J. F., LL.D.
 1883 Lounsbury, R. P.
 1906 Lovejoy, Arthur B.
 1876 Low, A. Augustus.
 1875 Low, Seth, LL.D.
 1903 Low, William G.
 1905 Lowell, Percival.
 1886 Ludington, Charles H.
 1899 Lütgent, Walther.
 1889 Lydig, David.
 1900 Lyman, Frank.
 1888 Lynch, James D.
 1906 Lyon, David H.

 1903 McConnell, Samuel P.
 1895 McCord, William H.
 1905 McCormick, Robert H., Jr.
 1887 McCready, N. L.
 1906 McDonald, Alexander.
 1906 McDonald, Wm.
 1903 McDougall, Walter.
 1901 McFarlane, C. T.
 1906 McIntyre, Thos. A.
 1897 McKeen, James.
 1888 McKeever, J. Lawrence.
 1906 McKnight, Robt. Lewis.
 1898 McLean, Donald.
 1904 McMillan, William Northrup.
 1895 McMillin, Emerson.
 1905 McQueeney, Francis J., M.D.
 1903 McWilliams, Daniel W.
 1903 Maas, Gustavus.
 1905 Macdonald, Benjamin J.
 1905 MacDougall, George R.
 1887 Mack, J. W.
 1903 Mackay, Clarence H.

Date of Election.
 1883 *Mackay, Donald.*
 1884 *MacKellar, William.*
 1890 Mackey, Charles W.
 1898 MacKie, Charles Paul.
 1901 Macy, George H.
 1901 *Macy, V. Everit.*
 1904 Mager, F. Robert.
 1898 Magerhans, Adolph W.
 1899 Mahl, William.
 1906 Mahony, Walter B.
 1889 *Maitland, Alexander.*
 1903 Mann, William D'Alton.
 1905 Manning, Charles H., U. S. N.
 1874 Marble, Manton.
 1897 Marc, Theophilus M.
 1904 Marcou, John B.
 1875 Marcus, Arnold.
 1895 Marcus, George E.
 1882 *Markoe, Francis H., M.D.*
 1888 *Marquand, Henry.*
 1898 Marsh, Joseph A.
 1901 Marshall, Charles H.
 1897 *Marshall, Louis.*
 1898 Marston, Edwin S.
 1875 *Martin, Bradley.*
 1888 *Martin, Oswald J.*
 1905 Marvin, Samuel W.
 1888 *Mason, Alexander T.*
 1901 Mather, Samuel.
 1901 Matthews, Albert.
 1899 Matthews, George E.
 1903 Maxwell, Francis Taylor.
 1901 Maxwell, Robert.
 1906 Maxwell, Wm.
 1905 Meeker, Stephen J.
 1891 Meeks, Edwin B.
 1902 *Mellen, Charles S.*
 1904 Mellor, Charles C.
 1907 Mercer, Richard S.
 1904 Meredith, William T.
 1905 Merrill, Fullerton.
 1906 Merrill, Wm. E.
 1901 Meyer, Harry H.
 1897 Millar, George W.
 1901 *Miller, Dr. George N.*
 1892 *Mills, A. G.*
 1880 *Mills, Darius O.*
 1875 Mitchell, Edward.
 1876 Mitchell, W. Howard.
 1905 Mixer, Frederick K.

Date of Election.
 1905 *Mohr, Louis.*
 1902 *Monks, John, Jr.*
 1890 Montant, Alphonse.
 1905 Moody, Arthur Blair.
 1906 Moore, C. Arthur, Jr.
 1859 *Moore, Frank.*
 1906 Moore, Henry Du Bois Bailey.
 1904 *Moore, John Bassett.*
 1884 *Moore, Joseph, Jr.*
 1863 *Moore, W. H. H.*
 1883 Morgan, E. D.
 1906 Morgan, Frederick G.
 1874 *Morgan, J. Pierpont.*
 1901 *Morgan, J. P., Jr.*
 1887 *Morgan, William Fellowes.*
 1889 Morgan, William H.
 1906 Morrell, Joseph B.
 1900 Morris, Fordham.
 1874 *Morris, Henry Lewis.*
 1905 *Morris, James.*
 1903 Morris, John.
 1906 Morris, Lewis R., M.D.
 1898 *Morris, Newbold.*
 1905 Morrison, Charles E.
 1902 Mortimer, Rev. Dr. Alfred G.
 1907 Mortimer, Richard.
 1906 Morton, Benjamin A.
 1864 *Morton, Levi P.*
 1898 Moss, Charles H.
 1905 Mount, William D.
 1906 Moxham, A. J.
 1906 Mullins, Edwin Stanton.
 1904 Myers, Joseph G.
 1888 Myers, Theodore W.
 1901 Neeser, John G.
 1905 Nelson, Dr. Wolfred.
 1891 Neukirch, Chas.
 1897 Nevers, George G.
 1899 Newbold, Clement Buckley.
 1897 *Newell, F. H.*
 1891 *Newman, Mrs. Angeline Ensign.*
 1899 Newton, James S.
 1897 Nichols, George L.
 1892 Nichols, O. F.
 1902 Nicolas, Louis J.
 1906 Nicoll, Courtlandt.
 1897 Nixon, Lewis.
 1897 Notman, George.
 1902 Noyes, Daniel Rogers.

Date of Election.

1905 *Noyes, Isaac Pitman.*
 1889 *Nunn, R. J., M.D.*
 1906 *Oakes, Charles.*
 1888 *Oakes, T. F.*
 1898 *Obermeyer, Joseph.*
 1879 *O'Brien, Thomas S.*
 1903 *O'Connor, Harry L.*
 1901 *O'Connor, Nicholas R.*
 1875 *O'Connor, Thomas H.*
 1887 *Ogden, William B.*
 1879 *O'Gorman, Richard.*
 1897 *Ohman, August R.*
 1901 *O'Leary, H. A.*
 1905 *Olyphant, Robert.*
 1874 *Olyphant, Robert M.*
 1875 *Opdyke, William S.*
 1893 *Operti, Albert.*
 1882 *Oppenheim, Edward L.*
 1889 *Orr, Alexander E.*
 1901 *Orvis, Charles E.*
 1903 *Osborn, Eugene E.*
 1905 *Osborn, William Church.*
 1901 *Outerbridge, Paul.*
 1896 *Owen, James, C. E.*
 1895 *Owen, Miss Luella A.*
 1906 *Owsley, Dr. Henry F.*
 1905 *Packard, Ralph G., Jr.*
 1898 *Paget, Americ H.*
 1889 *Palmer, Stephen S.*
 1899 *Parish, Edward C.*
 1872 *Parish, Henry.*
 1905 *Parish, Henry, Jr.*
 1905 *Park, Trenor L.*
 1905 *Parker, Herschel C.*
 1902 *Parker, James H.*
 1905 *Parks, C. W., C.E., U.S.N.*
 1886 *Parris, Edward L.*
 1882 *Parrish, James C.*
 1905 *Parsell, Henry V. A.*
 1882 *Parsons, Mrs. Edwin.*
 1897 *Parsons, George.*
 1905 *Parsons, Herbert.*
 1882 *Parsons, John E.*
 1902 *Paton, David.*
 1897 *Paton, William Agnew.*
 1903 *Patterson, Charles Brodie.*
 1901 *Paulding, Gouverneur, II.*
 1907 *Peabody, Charles A.*

Date of Election.

1889 *Peck, Charles E.*
 1905 *Peck, W. A.*
 1898 *Pell, Frederick A.*
 1906 *Pell, Howland Haggerty.*
 1901 *Pell, Stephen H. P.*
 1874 *Penfold, William Hall.*
 1905 *Pennell, William W., M.D.*
 1906 *Penniman, James H.*
 1898 *Pennington, William.*
 1903 *Pepper, C. H.*
 1887 *Perdicaris, Ion.*
 1890 *Perkins, W. H.*
 1894 *Perry, John G., M.D.*
 1888 *Perry, William A.*
 1906 *Peters, Edward G.*
 1891 *Peters, Edward McClure.*
 1887 *Peters, Samuel T.*
 1903 *Peters, William Richmond.*
 1906 *Phelps, Gouverneur Morris.*
 1901 *Phelps, John J.*
 1902 *Phipps, Lawrence C.*
 1887 *Phoenix, Lloyd.*
 1886 *Phoenix, Phillips.*
 1889 *Pickering, Edward C.*
 1905 *Pickett, William Douglas.*
 1895 *Pickhardt, Carl.*
 1902 *Pierce, Henry Clay.*
 1905 *Pierce, Robert Morris.*
 1906 *Pierrepont, R. Stuyvesant.*
 1905 *Pietrzycki, Marcel.*
 1893 *Pinchot, Gifford.*
 1880 *Pinchot, James W.*
 1891 *Pincus, Frederick S.*
 1898 *Piorkowski, Capt. A. E.*
 1885 *Planten, John R.*
 1893 *Platt, J. D.*
 1906 *Platt, Lewis A.*
 1882 *Platt, Thomas C.*
 1904 *Plimpton, George A.*
 1905 *Plimpton, Dr. Warren O.*
 1876 *Plum, James R.*
 1890 *Plumb, Edward L.*
 1905 *Plumb, Robert E.*
 1884 *Plush, Dr. Samuel M.*
 1906 *Poe, I. N.*
 1903 *Poggensburg, Henry F.*
 1906 *Poor, Henry V.*
 1890 *Poor, Henry W.*
 1891 *Porter, Henry Kirke.*
 1897 *Porter, William H.*

Date of Election.

1905 Post, Abram S.
 1884 Post, George B.
 1885 Post, William Henry.
 1890 Potter, Edward Clarkson.
 1898 Potter, Frederick.
 1905 Potter, Richard B., M.D.
 1905 Potter, William P.
 1901 Potts, Jesse W.
 1903 Potts, Thomas.
 1891 Powell, De Veaux.
 1905 Powell, William R.
 1880 Powell, Wilson M.
 1899 Pratt, Wallace.
 1897 Pray, Joseph M.
 1906 Prentice, F. W.
 1897 Prentiss, George Lewis.
 1903 Proctor, George H.
 1903 Proudfit, Frank F.
 1886 Pryer, Charles.
 1901 Purdy, J. Harsen.
 1905 Putnam, Henry St. Clair.
 1897 Putnam, Samuel.
 1903 Pyle, James Tolman.
 1894 Pyne, M. Taylor.
 1898 Pyne, Percy R.

1906 Queen, Emmet.

1905 Rand, Charles Franklin, M.D.
 1903 Randolph, Evan.
 1906 Randolph, Stewart F.
 1868 Raven, Anton A.
 1905 Raven, John Howard, D.D.
 1898 Rawson, Edward Stephen.
 1890 Raymond, Charles H.
 1886 Raymond, R. W.
 1902 Rea, Samuel.
 1901 Rea, Thomas B.
 1902 Ream, Norman B.
 1905 Reckefus, Charles N., Jr., M.D.
 1898 Redding, Joseph D.
 1903 Reid, Charles.
 1874 Reid, Whitelaw.
 1901 Reiff, Josiah C.
 1897 Reinhart, Joseph W.
 1903 Reno, Jesse W.
 1888 Renwick, Edward S.
 1905 Reynes, Antonio.
 1874 Reynes, Jaime.
 1903 Reynolds, James B.

Date of Election.

1882 Rhinelander, Charles E.
 1898 Rhinelander, Miss Serena.
 1888 Rhinelander, William.
 1886 Rice, Isaac L.
 1874 Richard, Auguste.
 1903 Richard, Edward A.
 1901 Riker, John L.
 1901 Riker, Samuel.
 1874 Riker, William J.
 1901 Rives, George Barclay.
 1887 Robb, J. Hampden.
 1903 Robin, Joseph G.
 1872 Robbins, Chandler.
 1891 Robbins, Miss Harriet L.
 1901 Robertson, Julius.
 1907 Robinson, Dr. E. S.
 1901 Robinson, Nelson.
 1905 Robinson, Seth B.
 1888 Robinson, William M.
 1903 Roe, Albert S.
 1890 Roe, Major-Gen. Charles F.
 1889 Roelker, Alfred.
 1903 Roelker, William Greene.
 1906 Rogers, Abbott S.
 1906 Rogers, Allen Merrill.
 1887 Rogers, Archibald.
 1905 Rogers, Edward L.
 1903 Rogers, Robert.
 1896 Roncière, St. Croix de la.
 1905 Roosevelt, Franklin Delano.
 1868 Rose, Cornelius.
 1903 Ross, Morgan R.
 1905 Rossington, W. H.
 1903 Rossiter, Clinton L.
 1906 Rothschild, C. G.
 1887 Rowell, George P.
 1883 Rowland, Thomas F.
 1897 Rubino, Jacob.
 1905 Ruprecht, Philip.
 1897 Rusch, Henry A.
 1899 Russak, Frank.
 1874 Russell, Archibald D.
 1889 Ryan, Thos. F.

1906 Sachs, Arthur.
 1906 Sachs, Paul J.
 1905 Sachs, Samuel.
 1898 Salomon, William.
 1901 Sampson, Alden.
 1904 Sampson, Charles E.

Date of Election.	Date of Election.
1875 Sandford, Elliott.	1888 Sherman, Charles A.
1895 Sands, Robert C.	1886 Sherman, George.
1878 Sands, William R.	1865 Sherman, W. Watts.
1895 Sandford, Robert.	1903 Sherwood-Dunn, B.
1886 Satterlee, F. LeRoy, M.D.	1898 Shillaber, William, Jr.
1903 Satterlee, Herbert L.	1906 Shippee, Carl C.
1904 Saul, Charles R.	1906 Shoemaker, Murray M.
1870 Schafer, Samuel M.	1887 Shortall, John G.
1897 Schaus, Herman.	1906 Shrady, John, M.D.
1890 Schell, F. Robert.	1876 Sibley, Hiram W.
1874 Schermerhorn, F. Augustus.	1903 Siegel, Henry.
1890 Schernikow, Ernest.	1903 Siegel, Jacob.
1898 Schieffelin, George R.	1903 Simpson, Ernest L.
1875 Schiff, Jacob H.	1898 Simpson, William T.
1902 Schiff, Mortimer L.	1883 Sinclair, John.
1903 Schirmer, Gustave.	1905 Skinner, Robert Peet.
1903 Schirmer, Rudolph E.	1906 Slater, James.
1906 Schlener, John A.	1874 Sloan, Samuel.
1903 Schloss, Henry W.	1899 Smiley, Albert K.
1885 Schmelzel, William R.	1901 Smillie, Charles F.
1901 Schmid, Dr. H. Ernest.	1893 Smith, Benjamin E.
1905 Schott, Charles M., Jr.	1890 Smith, Sir Donald A.
1888 Schultze, John S.	1902 Smith, Dr. E. Fayette.
1882 Schuyler, Spencer D.	1879 Smith, E. Reuel.
1902 Schwab, Charles M.	1906 Smith, George H.
1903 Scott, Edward W.	1899 Smith, J. Frailey.
1883 Scott, Rufus L.	1887 Smith, James Rufus.
1906 Scribner, Charles.	1887 Smith, Nathaniel S.
1895 Scudder, Moses L.	1901 Smith, Ormond G.
1905 Scull, Harry.	1889 Smith, Philip Sherwood.
1897 See, Horace.	1878 Smith, S. Newton.
1887 Seligman, DeWitt J.	1883 Smith, William Alexander.
1901 Seligman, Isaac N.	1895 Smith, W. Wheeler.
1887 Sellew, T. G.	1902 Smyth, Henry Lloyd.
1903 Sells, Elijah W.	1890 Snow, Elbridge G.
1902 Seward, Frederick W.	1903 Snow, Fred W.
1898 Seward, George F.	1895 Sorchan, Victor.
1898 Seward, Gen. William H.	1904 Soulsby, Basil Harrington.
1893 Sexton, Edward Bailey.	1880 Southwick, Henry K.
1905 Shaler, William Griggs.	1906 Spangler, Harry A., M.D.
1871 Shaler, Major Gen. Alexander.	1883 Spence, Lewis H.
1897 Shardlow, Joseph.	1905 Spencer, Edwards.
1903 Shaughnessy, Sir Thomas G.	1905 Spencer, Henry B.
1893 Shaw, Charles A.	1906 Speranza, Gino C.
1895 Shaw, W. M.	1905 Speyer, James.
1906 Shaw, Walter W.	1856 Spofford, Paul N.
1897 Sheehy, W. H.	1906 Spohn, Arthur Edward, M.D.
1905 Sheffield, George St. John.	1904 Squires, Grant.
1888 Sheldon, Edwin B.	1897 Standish, Miles.
1906 Sheppard, James J.	1905 Stanton, Robert Brewster.

Date of Election.

1903 Steinway, Frederick T.
 1887 Sterry, George E.
 1904 *Sterry, John DeWitt.*
 1879 Stetson, Francis Lynde.
 1887 *Stetson, George W.*
 1906 Stevens, Arthur W.
 1879 *Stevens, Frederick W.*
 1901 Stevenson, Edward Luther, Ph.D.
 1898 Stevenson, Paul Eve.
 1895 Stevenson, R. W.
 1905 Stewart, John H. J.
 1887 Stewart, Lispenard.
 1878 Stewart, William Rhinelander.
 1901 *Stickney, Charles D.*
 1891 Stieglitz, Edward.
 1905 Stillwell, Arthur E.
 1905 Stillwell, Lewis Buckley.
 1897 Stine, Marcus.
 1904 Stokes, Anson Phelps.
 1892 Stokes, I. N. Phelps.
 1884 Stokes, James.
 1895 Stone, Mason A.
 1883 Stone, Sumner R.
 1889 Strauss, Isidor.
 1906 Straus, Dr. Rosa Welt.
 1903 Strauss, Frederick.
 1906 *Strong, Charles Hamot.*
 1904 Strong, George A.
 1906 Stuart-Wade, Dr. C. H.
 1904 Stuck, Rev. Hudson.
 1873 Sturges, Frederick.
 1875 Sturges, Henry C.
 1906 Sturges, Rush.
 1873 *Sturgis, Frank K.*
 1901 Sturgis, Thomas.
 1872 *Stuyvesant, Rutherford.*
 1891 *Suckley, Robert B.*
 1887 Sutton, J. Ford, D.D.
 1903 Sutton, James F.
 1893 Swayne, Francis B.
 1906 Sweet, Henry N.
 1905 Swords, Henry C.

 1882 *Tailler, Edward N.*
 1906 Talbot, Fritz B., M.D.
 1877 *Talcott, James.*
 1889 Tatham, Charles.
 1902 Taylor, Charles H., Jr.
 1868 Taylor, Douglas.
 1906 Taylor, Ellsworth M.

Date of Election.

1906 Taylor, Frank B.
 1902 Taylor, Frederick F.
 1895 Taylor, George.
 1903 Taylor, Henry R.
 1901 Taylor, Walter C.
 1882 *Terry, John T.*
 1876 *Terry, Rev. Roderick.*
 1901 Terry, Walter Phillips.
 1900 Tesla, Nikola.
 1883 Thalmann, Ernest.
 1891 Thaw, Benjamin.
 1905 *Thebaud, Paul G.*
 1897 Thomas, Geo. C.
 1905 *Thomas, William S., M.D.*
 1898 Thompson, D. W.
 1904 *Thompson, Mrs. Frederick F.*
 1902 Thompson, John C.
 1901 *Thompson, Lewis S.*
 1898 Thompson, Walter.
 1902 *Thomson, Elihu.*
 1886 Thorne, Jonathan.
 1890 Thorne, Samuel.
 1890 Thorp, John R.
 1906 Thurston, Edward S.
 1885 Tiffany, C. C., D.D.
 1906 Tindall, Henry B.
 1891 *Tobey, Gerard C.*
 1897 Tonnelé, Walter.
 1906 Toothe, Edward S.
 1906 Townsend, Edwin S.
 1905 Townsend, J. Henry.
 1900 Tracy, J. Evarts.
 1893 Trusdell, Warren N.
 1899 *Tucker, George F.*
 1905 Tucker, William C.
 1901 *Tuckerman, Alfred.*
 1901 *Tuckerman, Paul.*
 1900 Turnure, George.

 1905 Uhle, John B.
 1905 Ulich, H. P.
 1891 Ullmann, Emanuel S.
 1891 Ullmann, Ludwig.
 1897 *Underhill, Eugene.*
 1897 Untermeyer, Maurice.

 1906 *Vaile, J. F.*
 1887 *Van Alen, J. J.*
 1897 Van Antwerp, William C.
 1907 Van Cortlandt, Robert B.

Date of Election.

1889 *Vanderbilt, George W.*
 1878 *Vanderbilt, William K.*
 1906 Van Dusen, Dr. James Wallace.
 1876 Van Hoesen, George M.
 1900 Van Holland, Henry.
 1902 *Van Rensselaer, A.*
 1905 Van Sinderen, Howard.
 1887 *Van Slyck, George W.*
 1891 Van Winkle, Edgar B.
 1906 Veeder, Curtis H.
 1903 Veit, Richard C.
 1887 Verastegui, Alberto de.
 1900 *Vetter, Dr. Charles.*
 1906 Viele, Herman K.
 1901 von Briesen, Arthur.
 1875 *von Post, Herman C.*
 1903 von Schmid, J. O.
 1899 Vorse, Albert White.

 1890 *Wadsworth, Herbert.*
 1898 *Wadsworth, Wm. Austin.*
 1898 Wait, William B.
 1900 Walker, Henry Freeman, M.D.
 1898 Walker, William Augustus.
 1905 Wallace, Dillon.
 1906 Wallace, Gurdon B.
 1903 Wallace, William H.
 1898 Warburg, Felix M.
 1905 Ward, John Gilbert.
 1900 Wardwell, William T.
 1902 *Warren, Samuel D.*
 1895 Warren, William R.
 1889 Waterbury, John I.
 1906 Waters, Bertram Gordon.
 1898 *Watkinson, George.*
 1879 *Watson, Francis A.*
 1884 *Watson, George H.*
 1876 Wedemeyer, A. J. D.
 1900 Weeks, John R.
 1900 *Wehrhane, Charles.*
 1906 Weimer, Edgar A.
 1903 Weir, Col. John.
 1895 Wells, Charles W.
 1905 Wells, Mrs. John.
 1905 Wells, T. Tileston.
 1897 Wenman, James F.
 1907 Wentz, Theodore.
 1898 Weston, Edward, Sc.D., LL.D.
 1906 Weston, Frederick W.
 1906 Wetmore, Charles W.

Date of Election.

1888 Wetmore, Edmund.
 1874 *Wetmore, George P.*
 1872 *Wetmore, William Boerum.*
 1901 *Wetmore, W. S. K.*
 1905 Wheeler, John Davenport.
 1906 Wheeler, Samuel H.
 1907 Whinery, Charles C.
 1905 Whitaker, John E.
 1903 White, Abraham.
 1905 White, Alain C.
 1887 White, Alfred T.
 1887 *White, Henry.*
 1886 White, Horace.
 1887 *White, J. LeRoy.*
 1886 *White, S. V.*
 1887 White, William Augustus.
 1905 White, William H.
 1878 *Whitehead, Henry M.*
 1901 Whitehouse, William FitzHugh, Jr.
 1898 Whitfield, R. P.
 1905 Whitney, Caspar.
 1903 Whitney, Horace P.
 1891 Whitney, Milton B.
 1902 *Whitney, W. Beaumont.*
 1905 Whittier, Charles Albert.
 1898 Wilkins, Hartwell A.
 1901 *Willets, Howard.*
 1900 Willets, John T.
 1905 Williams, Benjamin C.
 1882 *Williams, David.*
 1902 *Williams, John Skelton.*
 1901 Williams, John T.
 1906 *Williams, Richard H.*
 1901 *Williams, Timothy S.*
 1893 Wills, Charles T.
 1905 Wilmerding, Gustav L.
 1903 Wilson, Henry R.
 1870 *Wilson, Gen. James Grant.*
 1905 Wilson, John E., M.D.
 1875 Winslow, Gen. Edward F.
 1901 Winslow, John Flack.
 1902 Winter, Emil.
 1906 Winter, Mahlon A.
 1900 *Winthrop, Grenville L.*
 1888 Witherbee, Frank S.
 1891 Wolcott, Henry Roger.
 1906 Wolfe, Elmer E.
 1897 Wolff, Emil.
 1905 Wood, Henry A. Wise.
 1903 Wood, Henry R.

Date of Election.

1905 Wood, Joseph.
1900 Wood, Orrin S.
1884 Wood, William H. S.
1898 Woods, Edward A.
1888 *Woodward*, James T.
1906 Worrall, Charles Addams.
1905 Wray, Albert A.
1904 Wright, J. Dunbar.
1886 Wright, William Phillips.
1907 Wunderlich, Frederick W., M.D.
1902 *Wyckoff*, Clarence F.

Date of Election.

1902 *Wyckoff*, Edward G.
1901 Wyckoff, William F.
1905 Yeisley, George C., D.D.
1895 Young, Richard N.

1884 *Zabriskie*, Andrew C.
1898 Zaring, Charles W.
1905 Zickel, S.
1905 Zucker, Peter.

BOOK NOTICES.

A Satchel Guide for the Vacation Tourist in Europe. By W. J. Rolfe. ix and 307 pp., Maps, and Index. Houghton, Mifflin & Company, Boston and New York, 1907. (Price, \$1.50.)

The service which this accurate little volume renders to tourists is enhanced by the fact that it is revised every year. Many of the details that a tourist needs to know are anything but "constant quantities," and the advantage of frequent correction is obvious. The book also differs from many other guidebooks in describing one continuous route, arranged to take in the maximum of what is best worth seeing with the minimum of travel. The admirable maps by Bartholomew are also annually revised. The book has long been before the public, and its practical value is known to many thousands of tourists.

The Turk in the Balkans. By T. Comyn-Platt. viii and 175 pp., Illustrations, Map and Appendix. Alston Rivers, Ltd., London (1906?)

The author criticises the best maps of Macedonia as not always to be relied upon. A road may be clearly marked as leading to a certain town and yet one may ride all day without finding a trace of it, while, on the other hand, he stumbles across routes which are not found on the maps. He says that the only way to see and to understand something of Macedonia is to strike inland across the mountain, "where alone the village peasant is discovered in his true colours and the story of his life may be inquired into without fear of interruption." Such travel out of the beaten tracks is not expensive, but it means the sacrifice of every comfort. The book deals almost exclusively with Macedonia, and the author sketches, to some extent, the outlines of Macedonian life and the political and social condition of the country. Many places in the text do not appear on the map.

Cities of Northern Italy. By Grant Allen and George C. Williamson. In two Volumes. Vol. I: Milan. xxix and 229 pp., Illustrations and Index. Vol. II: Verona, Padua, Bologna, and Ravenna. ix and 291 pp., Illustrations and Index. L. C. Page & Company, Boston, 1906. (Price, \$3.)

The late Mr. Grant Allen was a great traveller. In this book are collected the fruits of his wide experience and trained judgment as to what historical and antiquarian information tourists should possess in order to understand and enjoy the architecture, sculpture, painting, and minor arts of the towns visited. For several years he gave much of his time to collecting and arranging material for a book that should carry out this helpful idea without interfering with the province of Baedeker or Murray. Before his book was completed, Mr. Grant Allen's labours were cut short by his death. His friend Mr. George C. Williamson, who was fully acquainted with Grant Allen's ideas concerning the book, completed it on the same lines; and many readers will agree that he has happily followed the spirit and the manner of the lamented author. The facts given in these volumes, in the main, are those which will help the tourist to enjoy and understand Italian art.

The first volume is given to Milan and the second to Verona, Padua, Bologna,

and Ravenna. While the book is written with a view to helping those whose time is limited, the reader is urged to be leisurely if possible and not to rush through the towns as though each resembled the other, for each has its own individuality, is replete with its own interest, and merits careful study:

It is far better to spend a week in each town and only see and thoroughly understand three towns, than to rush through ten and bring away a confused idea of them all without any distinctive knowledge of their distinctive features.

The book will certainly help the tourist to use travel as a means of culture. It leaves to other guide-books all information about material conveniences and practical travel-lore. The work is attractive in binding, typography, and photographs.

La Science Géologique : Ses Méthodes—Ses Résultats—Ses Problèmes—Son Histoire. By L. De Launay. Paris, Armand Colin, 1905.

This ponderous tome of 750 pages, as the sub-title indicate, covers a vast range of geologic topics, leading through the department of organic geology as well as through that of synthesis and chemistry, and is placed by its comprehensiveness almost beyond the possibility of an adequate single-handed review. With a leaning on one side to the text of Lapparent, and on the other to the method of the *Antlitz der Erde* of Suess, it occupies, in a sense, a position intermediate between the works of these masters, while retaining sufficient originality to permit it to be grouped apart in a class of its own. The work is markedly one of theory and discussion—with many of the most abstruse questions settled to the satisfaction of the author—to which Prof. De Launay, with a vast experience on the chemical and petrographic side of geology, contributes a fund of important thought and suggestion. Although, perhaps, not intended to convey this impression, the *Science Géologique* is apt to force upon the mind of the impartial reader the uncomfortable feeling that "things are not as they are," and that much of the groundwork of the science with which it deals has still to be fixed. The physics of the early stages of our planet, and of the interior of the planet as it exists to-day, are debatable ground, as they were upwards of fifty years ago, and, doubtless, will continue to remain such for still a long period in the future, so long as the most eminent investigators can hold to views so diametrically opposed to one another as those that have been so forcibly enunciated in a generation by Lord Kelvin, Sir George Darwin, Chamberlin, Rutherford, and Arrhenius. One can easily believe that the true knowledge of the earth's interior may lie just beyond the possibilities of research and of human understanding.

De Launay's work is supplemented by three maps, illustrating respectively the zones of terrestrial plication in the northern hemisphere, the foldings of the Asiatic continent, and the western section of the European continent in its relation to Hercynian movements. There are practically no illustrations in the text.

A. H.

Cook's Handbook for Egypt and the Sudan. By E. A. Wallis Budge. (Second Edition.) xxi and 911 pp., many Illustrations, and Maps.

Thomas Cook & Son, London, 1906. (Price, 10 Sh.)

An introduction of thirty pages, filled with practical information for travellers, leads up to a series of chapters (Part I) outlining the history of Egypt, with brief accounts of the writing, religion, art, architecture, etc., of the ancient Egyptians. Parts II-IV contain descriptions of all the principal places in the Delta,

the Nile Valley, and the Peninsula of Sinai, where monuments of the ancient civilization are found. A brief account of the Nile from Khartum to the Equatorial Lakes is included. The principal facts are given with regard to all the ancient monuments of Egypt and the Nile Valley.

The Cradle of the Republic. Jamestown and James River. By Lyon Gardiner Tyler. vi and 286 pp., many Illustrations, Maps and Index. The Hermitage Press, Richmond, 1906. (Price, \$3.)

Dr. Tyler, President of the College of William and Mary, Williamsburg, Va., has issued a second edition of this work, in which new sources of information have enabled him to deal more satisfactorily with the history of the land transfers and other minute information relating to the early days of Jamestown and the James River. He has identified many localities, and it would not now be difficult to reconstruct Jamestown in wood and brick approximately as it stood in 1676. The book is a compilation of all the authentic information that can be obtained with regard to this first permanent settlement of the English people in America. It is a story of the hardest kind of pioneering, made doubly important, as an historical episode, by the relation of the colony to the later development of the country. Dr. Tyler has rendered valuable service by his patient efforts to unravel the intricacies in which this chapter of history was still involved. He has ably supplemented the efforts of earlier investigators, and has perhaps placed before the public practically all that will be recovered of the history of the Jamestown Colony.

Great Britain in Modern Africa. By Edgar Sanderson. v and 372 pp., 4 portraits, Map and Index. Seeley & Co., Lim't'd, Lond. 1907.

On the whole a very careful history of Great Britain's participation in the exploration, partition, and government of Africa. The narrative is not so condensed as to impair readability, the dates are correct as far as the reviewer has observed, and an excellent index places all the information within easy reach. The general accuracy of the book makes prominent such a slip as the following:

Missionary effort among . . . the Waganda was revived (after work done since 1837 by the Church Missionary Society, with Krapf and Rebmann, whom we have seen in exploration, as pioneers) in 1875 by Stanley's reports. . . .

Krapf and Rebman never worked within hundreds of miles of Uganda, and the Church Missionary Society did not enter that region until after Stanley's call for missionaries.

Wisconsin. Its Geology and Physical Geography. By E. C. Case. 197 pp., and 51 maps, diagrams, profiles and photographs. Press of Hendee-Bamford-Crandall Co., Milwaukee, 1907. (Price, \$1.00.)

Dr. Case is Professor of Geology and Physical Geography in the State Normal School at Milwaukee. His book is a popular account of the natural features and climate of the State, for students and general readers. It is scientific as well as popular, and is to be heartily commended, not only to students who are preparing to teach in Wisconsin schools the chief geological and physiographical aspects of the State, but also to every one who wishes to familiarize himself with principles of geology and physical geography that are of the widest application. The climate, drainage, soils and mineral resources of Wisconsin are well treated and we should like to see additional chapters in the book describing the influence of the natural features of the State in shaping its human development.